OCTOBER 6, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

Bridging the Recession

Many machine tool makers are counting on rebuilding jobs to jack up sales volume. Plan helps money-short users . . . Page 39

Ohio Key in Right-To-Work

Vote on Nov. 4 will influence action in other states . . . Page 50

Circular Layout Offers Shortcuts

Heat treaters find installation easier to maintain . . . Page 72

Simple Plan Ups Short Run Quality

It quickly pinpoints trouble spots for management . . . Page 88

Inventories Level Off

Buyers of parts have few oversupplies or shortages . . . Page 111

Spiral Bevel....

Hypoid Bevel...

Zerol Bevel.....*

Straight Bevel...

Coniflex Bevel...*

Flywheel Ring Gears .....

Straight Spur.....

Spur & Helical...

Spline Shafts .....

Straight & Spiral Angular Bevel....

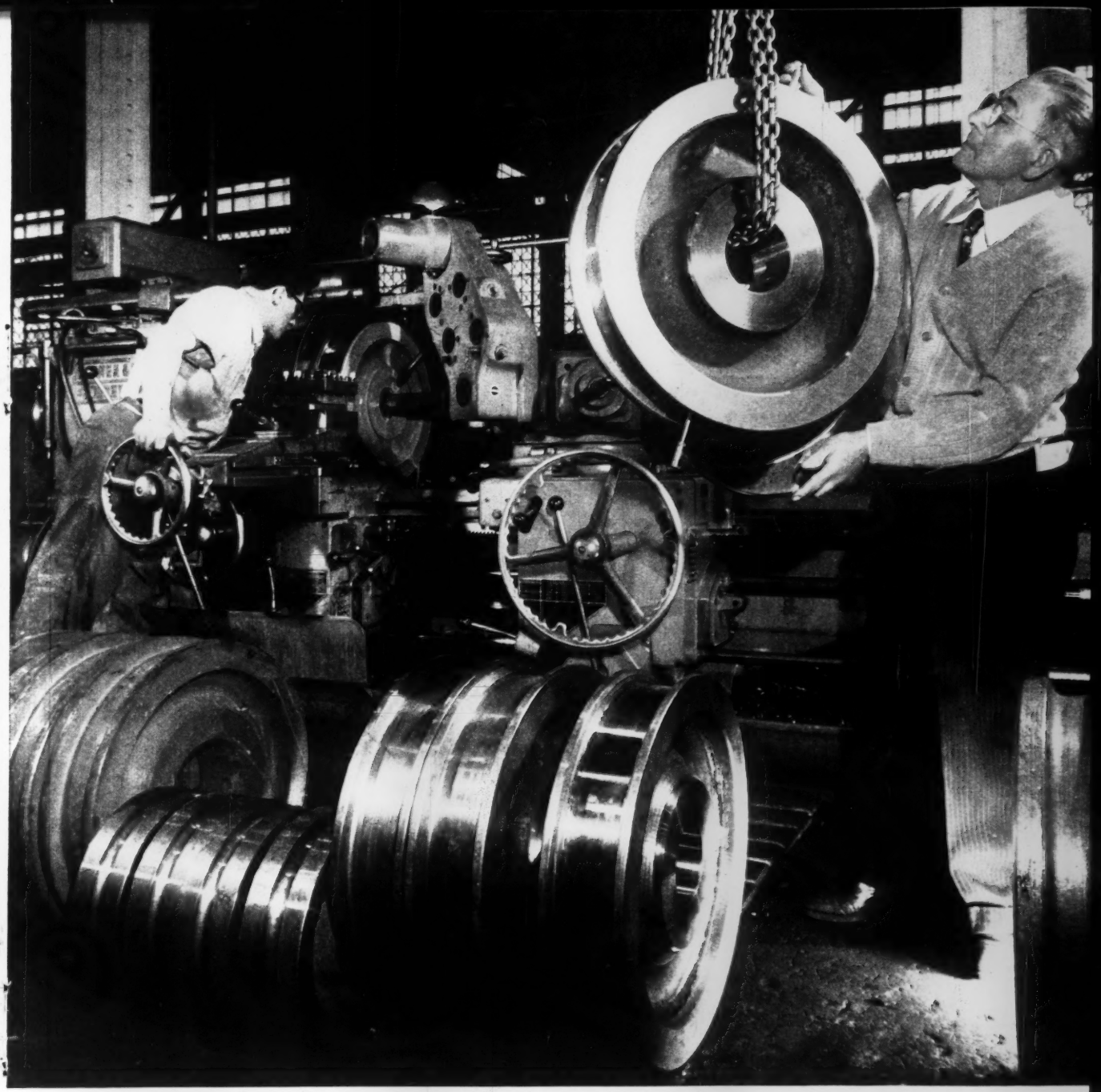
Assemblies.....

write ➧
(on your letterhead)

IS THE ANSWER TO YOUR GEAR PROBLEM IN THIS NEW 44-PAGE CATALOG?

The 10 gear types in which we specialize are comprehensively covered together with "vital statistics" on our 44 years of gear specialization. Our gear engineers are available for consultation.

*Reg. U.S. Pat. Off.



Good, Sturdy Blanks all the way through

Fine lot of crane wheels, aren't they? Beautifully machined. They look solid and strong and dependable all the way through. And they're just as sturdy as they look, for they're made from Bethlehem forged-and-rolled blanks.

Bethlehem's unique forging and rolling process imparts soundness, high strength, and excellent grain flow. It makes the machinist's job easier, less costly; the forgings have no hidden flaws to snag and slow the cutting tool.

For making circular steel parts, our forging and rolling process simply can't be surpassed. Bethlehem blanks are widely used in the making of heavy-duty gears, crane and sheave wheels, turbine rotors, flywheels, pipe flanges, and many other circular products. Available in either carbon or alloy steel, they can be furnished in a wide choice of sections and in sizes from 10 to 46 in. OD.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

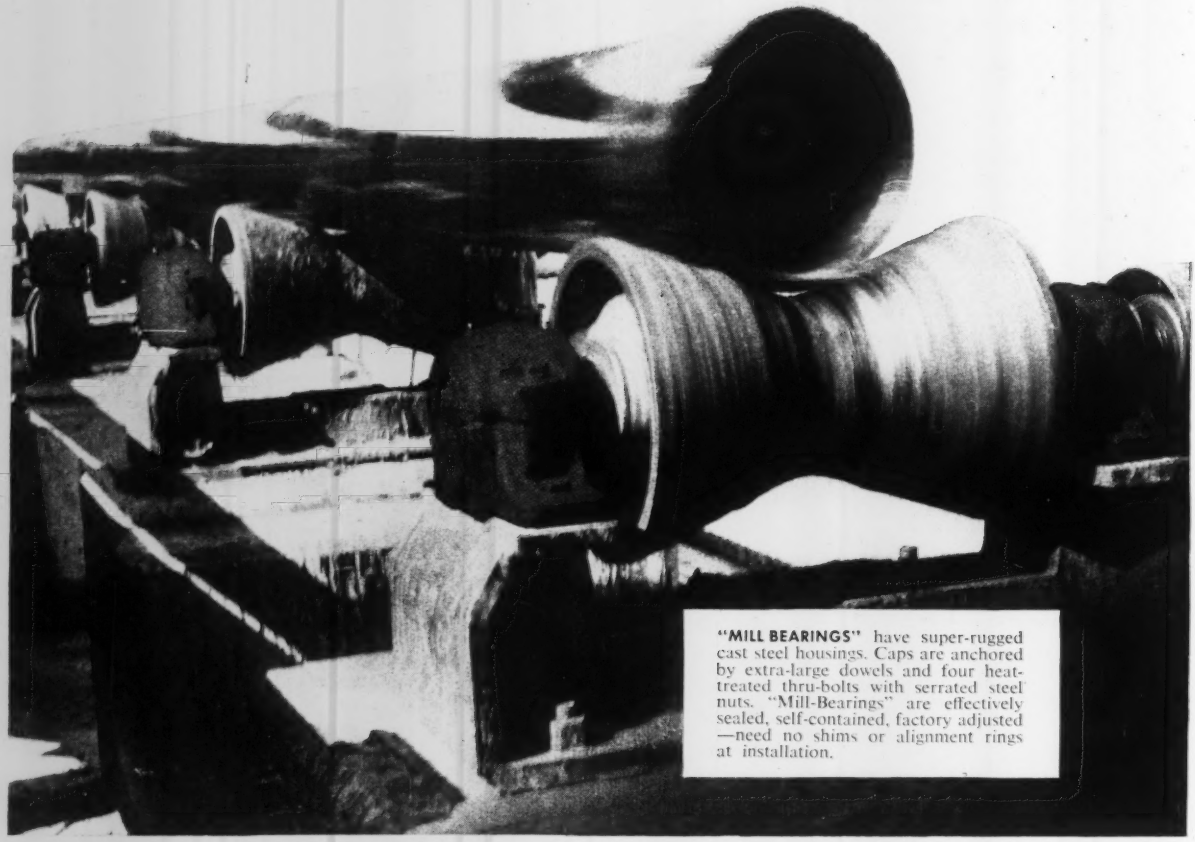
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

HERE'S SELF-ALIGNMENT

in a steel housing

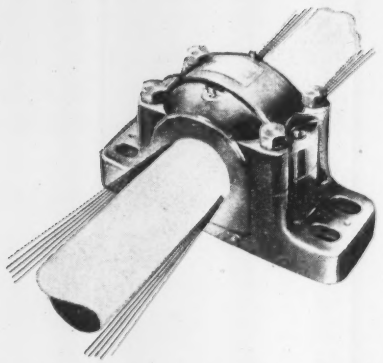


"MILL BEARINGS" have super-rugged cast steel housings. Caps are anchored by extra-large dowels and four heat-treated thru-bolts with serrated steel nuts. "Mill-Bearings" are effectively sealed, self-contained, factory adjusted —need no shims or alignment rings at installation.

LINK-BELT "Mill Bearings" compensate for shaft deflections in extra-severe applications

With cast steel housings plus *self-alignment*, Link-Belt "Mill Bearings" are a perfect match for the grind and grime of heavy loads in steel mills, mines, foundries and similar grueling service. They instantly adjust to shaft misalignment . . . accommodate minor inaccuracies of welded and concrete support structures . . . end need for extra-heavy shafting to avoid deflections which ruin ordinary bearings.

Link-Belt "Mill Bearings" are part of industry's most complete line of self-aligning ball and roller bearing blocks. You can get full information from any of 40 Link-Belt offices or your authorized stock-carrying distributor.



Spherical bearing is free to align in any direction, assuring full load capacity regardless of shaft deflection.

LINK-BELT

THE SYMBOL OF QUALITY — LINK-BELT

MANUFACTURERS OF SELF-ALIGNING BALL AND ROLLER BEARINGS

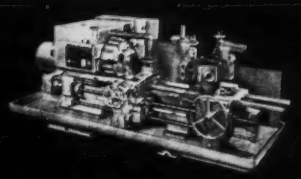
LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 42.6

Get the competitive edge for the years ahead...

by planning a continuing modernization program

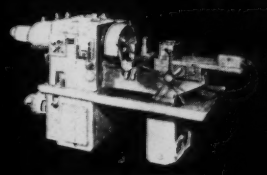
Look to the company that is constantly analyzing modern trends in metalworking to better fulfill the needs of industry by developing new types and sizes of machines—extending its Sales Engineering facilities to be of even greater service.

Look to your Warner & Swasey Field Engineer as your "turning specialist". He can help you select the right machine, and will continue to *share your interest* in its performance in the years ahead.



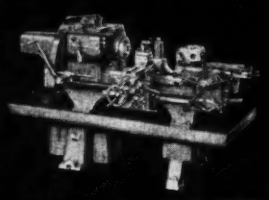
SADDLE TYPE TURRET LATHES

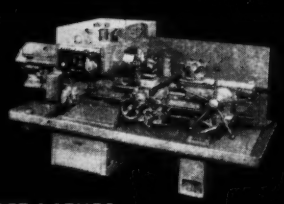
1-A UNIVERSAL EXTRA HEAVY DUTY
2½" or 3" Bar Capacity — 16¼" Swing
2-A UNIVERSAL EXTRA HEAVY DUTY
3½" or 4½" Bar Capacity — 20" Swing
3-A UNIVERSAL EXTRA HEAVY DUTY
4½" or 6" Bar Capacity — 23½" Swing
4-A UNIVERSAL EXTRA HEAVY DUTY
9" or 12" Bar Capacity — 28¼" Swing
5-A UNIVERSAL EXTRA HEAVY DUTY
12" Bar Capacity — 36" Swing



ELECTRO-CYCLES®

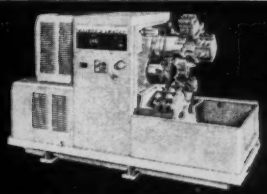
No. 1 ELECTRO-CYCLE
⅝" Bar Capacity—11" Swing
No. 3 ELECTRO-CYCLE
1½" Bar Capacity — 15⅜" Swing
16" ELECTRO-CYCLE
1½" Bar Capacity — 16⅞" Swing
® Reg. U. S. Pat. Off.





RAM TYPE TURRET LATHES

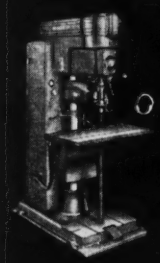
No. 2 ALL-GEARED HEAD
1" Bar Capacity — 14" Swing
No. 3 UNIVERSAL
1½" Bar Capacity — 15⅜" Swing
No. 4 UNIVERSAL
2" Bar Capacity — 18⅛" Swing
No. 5 UNIVERSAL
2½" or 4½" Bar Capacity — 20" Swing



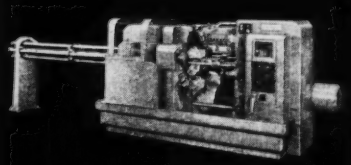
SINGLE SPINDLE AUTOMATICS

1 AC CHUCKING MACHINE
8" or 10" Chuck — 6" Working Stroke
2 AC CHUCKING MACHINE
10" or 12" Chuck — 9" Working Stroke
3 AC CHUCKING MACHINE
15" Chuck — 11" Working Stroke
2 AB BAR MACHINE
3" Bar Capacity — 9½" Working Stroke

PRECISION TAPPING AND THREADING MACHINES



No. 10
TAPPING MACHINE
0-80 to 10-24 Capacity
No. 11
TAPPING MACHINE
8-36 to ⅞" Capacity
No. 11 RS
RADIAL (Single Head)
No. 11 RD
RADIAL (Double Head)
8-36 to ⅞" Capacity
No. 12 TAPPING MACHINE
⅜" to 2½" Capacity



MULTI-SPINDLE AUTOMATICS

6-SPINDLE BAR MACHINE
1¼" Bar Capacity
5-SPINDLE BAR MACHINE
1¾" Standard Bar Capacity
2¼" Oversize Capacity
5-SPINDLE CHUCKING MACHINE
6" Swing

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS... WITH A WARNER & SWASEY

Now, Star Band Saw Blades in New Reel-Pac DISPENSER ...at no increase in price!

Here's a new way to package band saw blades that makes handling, storing, and measuring a snap. It's Star's unique, unbreakable Reel-Pac containing 100 feet of blade.

To use, all you do is pull out the length you need – and cut off. If you pull out more than you need, you can easily slide it back in on the reel.

Spring tension of the blade won't distort this tough dispenser and there's no danger of blade fouling.

Your STAR distributor now stocks Star blades in the new Reel-Pac dispenser. Call him soon. 1699

1 Clearly marked with blade size and type. Outline flexible back and gored tooth and skip tooth blades up to ½" now available in easy to use and store Reel-Pac dispenser.

2 Free-running Reel-Pac of unbreakable material has special guard shield to protect hands and package from blade teeth.

STAR HACK SAW and BAND BLADES

Manufactured by

CLEMSON BROS., Inc. · Middletown, N. Y., U. S. A.

Makers of Hand and Power Hack Saw Blades, Frames, Metal and Wood Cutting Band Saw Blades and Clemson Lawn Machines

This Week in STEEL The Metalworking Weekly

October 6, 1958
Vol. 143 No. 14

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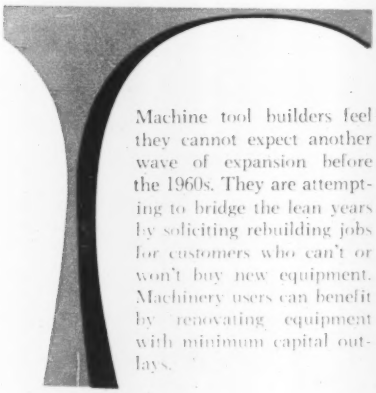
Take a look at your selling techniques: The "soft sell" has a tendency to degenerate into "no sell."

SPECIAL FEATURE 39

Bridging the Recession



Machine tool builders feel they cannot expect another wave of expansion before the 1960s. They are attempting to bridge the lean years by soliciting rebuilding jobs for customers who can't or won't buy new equipment. Machinery users can benefit by renovating equipment with minimum capital outlays.

WINDOWS OF WASHINGTON 46

Wanted: Better government statistics on which managers can base decisions. Coming: Decision between Thor and Jupiter.

MIRRORS OF MOTORDOM 53

Pontiac lines upgraded. Competition shifted from luxury cars of low-priced three to the medium price field.

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Cleveland businessmen forecast U. S. economy will reach record level next year, but salt prediction with "ifs."

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No Costly Delay when YOU *specify* ACME CHAIN

PROMPT DELIVERY in all sizes on ACME CHAINS — SPROCKETS COUPLINGS IN ANY QUANTITY FROM YOUR DISTRIBUTOR

behind the scenes

Watch Big Thinkers

At one time it was thought that the world was made up of thinkers and doers, but we are inclined to believe that a third division should be recognized, a division of watchers. You see watchers at building excavations, ball games, street fights; in the vicinity of traveling celebrities, on the fringes of cafe society, and in front of millions of television sets. Thoreau liked to watch a pond; Burroughs delighted in watching flowers; Audubon loved to watch birds; many persons are interested in watching horses. We like to watch U. S. presidents. It is stimulating to watch them think.

Lincoln's heart bled for the slaves, but he didn't free them on humanitarian grounds; he freed them as a war measure. The act was an economic blow at the Confederacy. Behind those whiskers, Honest Abe was thinking all the time.

Calvin Coolidge brings to mind some lines written by Robert Browning about Napoleon at the storming of Ratisbon: "Legs wide, arms locked behind, as if to balance that prone brow, oppressive with its mind." Calvin frequently stood that way. In fact, he was standing that way when he analyzed a recurring problem in basic economics. "When more and more persons lose their jobs," he said shrewdly, "unemployment results."

Harry Truman uses his head in a spectacular way, too. A few weeks ago, in the course of a public declaration, he neatly tripped up some Republican Pollyannas. "They are clapping their hands," he said in effect, "over the fact that steel production is up to 65 per cent of capacity. They think this is wonderful. Don't they know what this means? It means that 35 per cent of our steel capacity is idle!"

Machine Tool Dilemma

The machine tool business is on short rations, and its builders are understandably hungry for trade. One of their plans, described in the story (Page 39), concerns the renovation and rebuilding of equipment. As in the case of the fat shipwrecked sailor who married into a native tribe for protection, and later discovered they were cannibals, the solution of one problem frequently begets more difficulties. If the machine tool people cleverly renew facilities, they may keep fairly busy, but will run the risk of killing orders for new machine tools. If they do nothing more than await the obsolescence and desuetude of machinery in operation, that is presumably what they may be doing well into the foreseeable future: Nothing.

Problems of the machine tool builders are properly the problems of all metalworking, so be sure to check STEEL's analysis of the situation.

Translation Wanted

Thanks to our good friends in the U. S. Government Printing Office, we have been tipped off to another jim-dandy buy for 15 cents. This time it is a booklet on the magnetic-doublet theory in the analysis of total-intensity anomalies. It discusses typical total intensity profiles of magnetic doublets of various lengths in various inclinations. Factors are derived for interpreting appropriate aeromagnetic anomalies in terms of their double equivalents. Wow! Ain't that a crock? Can anybody tell us what this is all about in 200 words or less? Even if we knew, it wouldn't make any difference, but it's sort of frustrating to read something in English and not know what you're reading.

Long Ago and Far Away

An interesting letter came from John Obrebski, chief metallurgist, Monarch Machine Tool Co., Sidney, Ohio. It was stirred by an item that appeared in this column relating to Editor-in-Chief Irwin Such's recent trip to Russia and Siberia. Mr. Obrebski was an artillery officer in the long vanished White Russian army, and his letter was as informative as it was nostalgic.

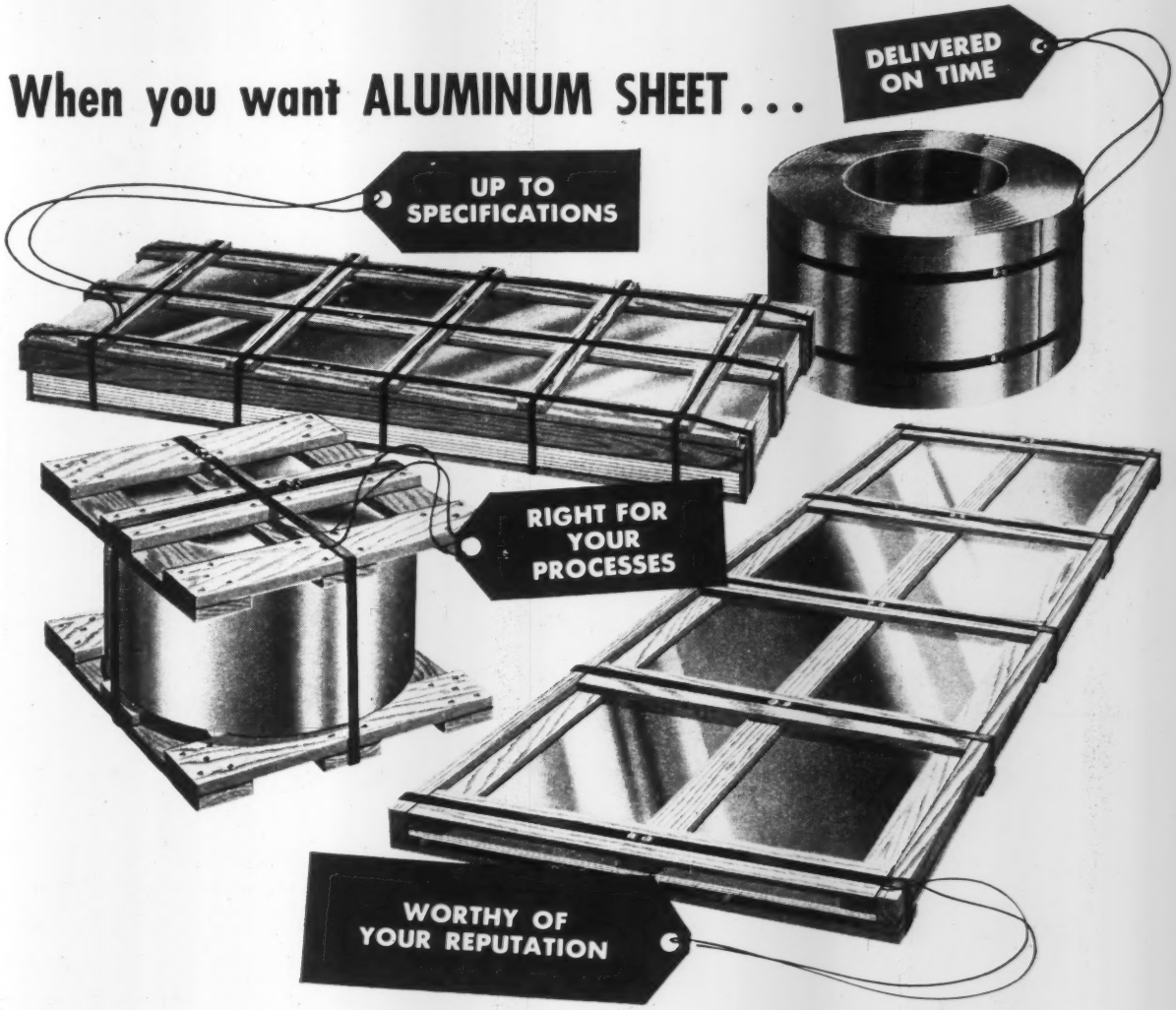
He said that Russian peasants didn't need dentists so long as they ate their wonderful black bread; it was just crammed with vitamins. All the fellows took steam showers, and rubbed themselves down with melon rinds, after which they leaped naked into snow drifts.

Caviar, he said, used to be $5 a pound, but the Russian people preferred their delicious black bread, anyway, together with mushrooms, wild ducks, salted cucumbers, partridges, and frozen fish, all washed down with sour cream. The soil in the Obrebski garden was thick and black, and measured around 9 ft deep, and the vegetables that came from it make John's mouth water even to this day in Sidney, Ohio. The food was so good and so nourishing that when mother Obrebski died, at the age of 85, she had all her teeth, and every one was long and white and strong. Perhaps the moral was that if you got bit by an octogenarian in pre-Soviet days, brother, you stayed bit!

Shrdlu

(Metalworking Outlook—Page 33)

When you want ALUMINUM SHEET...



CALL REVERE!

You can be sure, when you specify or order from Revere, that you will get not only fine metal but fine service, including Revere's cost-saving Technical Advisory Service if desired. Revere—now an integrated producer of aluminum—can supply you from large modern sheet mills in Baltimore, Md., and Chicago, Ill.

In addition to aluminum coiled and flat sheet, circles and blanks, both plain and embossed, Revere can furnish aluminum seamless drawn, welded and extruded tube; extruded shapes; forgings; foil; and primary aluminum pig and ingot.

It pays to do business with the most dependable sources of supply—such as Revere, which has been fabricating fine non-ferrous metals for more than 150 years.

Revere Aluminum Coiled and Flat Sheet
up to 48″ wide and up to .125″ thick

Alloys			
1100	3003	5005	5052
1145	3004	5050	5357

COPPER • BRASS • REVERE • ALUMINUM

REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

FAMOUS FALLACIES *about industrial advertising*

We don't see any results from our advertising

John L. Gillis replies to this one...

According to Mr. John L. Gillis, vice-president of marketing, Monsanto Chemical Company: "*Industrial advertising produces results when it puts into people's minds ideas which create a favorable attitude for salesmen to capitalize upon.*"

The specific effect of industrial advertising upon the market can seldom be measured alone.

Because: advertising is only one member of a marketing team which also includes product development, market research, sales control, field engineering and product performance — all reinforcing the work of the salesmen.

Most industrial salesmen today know that their companies' advertising is an invaluable aid to them in selling — particularly the unseen, unsuspected and inaccessible buying "influences" whose "OK" is often vital. These salesmen would be the first to agree . . .

Effective advertising support is one of the most valuable tools in the salesman's kit.

NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION, INC.

271 MADISON AVENUE, NEW YORK 16, NEW YORK

An organization of over 4000 members engaged in the advertising and marketing of industrial products, with local chapters in ALBANY, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CLEVELAND, COLUMBUS, DALLAS-FORT WORTH, DENVER, DETROIT, HAMILTON, ONT., HARTFORD, HOUSTON, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, MINNEAPOLIS-ST. PAUL, MONTREAL, QUE., NEWARK, NEW YORK, PHILADELPHIA, PITTSBURGH, PORTLAND, ROCHESTER, ROCKFORD, ST. LOUIS, SAN FRANCISCO, TORONTO, ONT., TULSA, YOUNGSTOWN.

At Roamer,
Yoloy "E" sheets and plates are hand-formed (hammered) to shape, then welded to the boat's frame.

Accent on Excellence

Youngstown Yoloy "E" high-strength steel

Here's the answer to a sportsman's prayer—this elegant Roamer 42-foot Royal built by Roamer Steel Boats Division of Chris-Craft Corporation, Holland, Michigan.

Keels, hulls and decks are easily fabricated from Youngstown Yoloy "E" High-Strength, low-alloy steel to provide long, trouble-free service life in salt water. Roamer reports Yoloy's strength, flatness and excellent weldability contribute in no small measure to maintaining their reputation as one of the world's quality steel boat builders. Yoloy steels are available in sheets, plates, strip, shapes, hot rolled and cold finished bars—also as seamless and continuous weld tubular products.

Wherever high-strength steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

Send for free technical bulletin on Youngstown Yoloy "E" Steel.

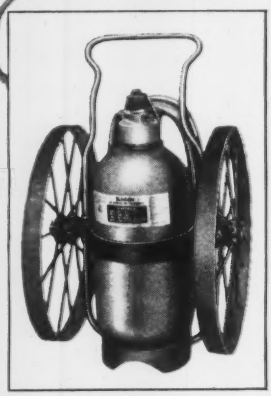
QUALITY YOUNGSTOWN SERVICE

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

NEW!

One-Man Dry Chemical Kills More Fire Faster!



This new Kidde pressurized 200-pound extinguisher gets *more* fire-smothering dry chemical on a blaze *faster!* Its universal nozzle discharges a dense 40-foot stream that gives more efficient extinguishing action, greater heat protection for operator.

It has an *extra* 50 pounds of dry chemical to discharge on any stubborn blaze. Not 150 pounds, but a full 200 pounds of dry chemical – a 33⅓% bonus for safety! Yet its total weight is less – no heavy, cumbersome gas cylinder.

It's faster to operate too. No valves to unscrew. No wait for pressurization, for dry chemical to fluff. No pressure reducer to malfunction. Just remove safety pin, swing valve toggle, and flip "on-off" nozzle lever. There's no hose whip either.

Only Kidde has the Bridgeman seal head assembly. When pressurized at 450 psi with nitrogen or *dry* air, an inner force of three tons acts on the seal – the more pressure, the tighter seal. Virtually leak-proof, tamper-proof.

Check these other benefits. A low, balanced center of gravity, wider handle, compact design, and larger, lubricated wheels make it easy to move. It's weather and corrosion protected. And the shielded dust-and moisture-proof pressure gauge tells at a glance this extinguisher's readiness for action.

Write Kidde today and get the full story on this new U.L.-approved One Man Fire Engine.

Kidde

Walter Kidde & Company, Inc.
1060 Main St., Belleville 9, N. J.
Walter Kidde & Company of Canada Ltd.
Montreal—Toronto—Vancouver

LETTERS TO THE EDITORS

New Picture of Russian

I am highly upset. Some person of questionable political background made off with my copy of STEEL. The copy in question was the one with the report on Russian steel production.

I have been collecting news stories about Russian industrial progress and, in the last few years, these stories have taken a disturbing pattern. I refer to those about education, basic metals production, dumping of surplus aluminum, price cutting in the shipbuilding industry, and other such subjects.

We seem to have a new picture of the Russian. He may still be the bearded, fur-hatted Ivan we knew before, but now he suddenly carries a double-edged sword: Military and economic.

I think we have more to fear from his economic warfare, unless there is an accident or perhaps a preventive war. We really have no chance in an economic war because we live and work (fight) by different rules.

Please send me a tearsheet of the survey of Russian steel.

David Lipman
Castle Avenue
Spring Valley, N. Y.

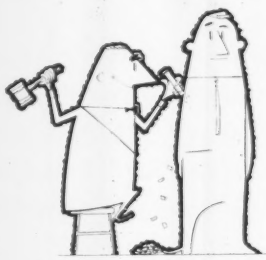
• *We are forwarding a copy of this special report, "Soviet Steel Industry" (Sept. 8, Page 85), by* STEEL*'s editor-in-chief, Irwin H. Such, who visited the Soviet Union as a member of a 19-man delegation of American steelmen.*

Short, to the Point

We have read with interest your article, "Productivity: How To Measure It . . . How To Boost It" (Aug. 25, Page 52), and find it short and to the point. Could you favor us with three copies?

E. C. Onosko
Supervisor-Cost Dept.
Tri-Clover Div.
Ladish Co.
Kenosha, Wis.

Building a Marketing Man



Your editors are to be complimented for their keen perception and commendable presentation of a most difficult subject in your Program for Management article, "Building Marketing Men" (Sept. 22, Page 69).

Those trained in the various disciplines of marketing and management so often

(Please turn to Page 12)

ATLANTIC LUBRICANTS

for every wheel that turns in industry

Wasting time and profits searching for the right gear oil for your machinery? Atlantic has the key to your problem, because our long experience has made us familiar with your lubricating needs. We've developed the products that can do any lubricating job to perfection . . . at low cost . . . for every wheel that turns in industry.

For further information on Atlantic's family of quality products for industrial lubrication and metal processing, write or wire The Atlantic Refining Company at the nearest office listed below.

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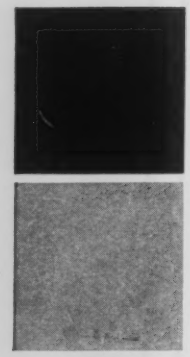
Atlantic Refining Company of Brazil, Rio de Janeiro

SHOW STOPPER



It's the new Torrington Verti-Slide, the first major innovation in the field of 4-SLIDE equipment in 50 years!

This machine was designed to meet a growing need for greater productivity and profitability in the cost-critical area of wire and strip forming.

Seldom before has a new machine created such immediate and widespread interest. We urge you to get the full story. Write or call today.

THE TORRINGTON MANUFACTURING COMPANY

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LETTERS

(Concluded from Page 10)

lack appreciation for the integrated marketing picture.

I would appreciate 100 reprints for distribution to my students and colleagues.

F. Robert Shoaf

Assistant Professor Marketing
Department of Marketing
School of Commerce, Accounts, and Finance
New York University
New York

Today's Sales Challenge

Please send two reprints of the article, "Needed: Hard-Time Selling" (Aug. 11, Page 32). It is an excellent, succinct statement of today's sales challenge.

Odom Fanning

Manager
Information Services
Midwest Research Institute
Kansas City, Mo.

Tips on Shotblasting

Will you please send six reprints of the article, "How Far Can You Go with Shotblasting?" (Aug. 18, Page 98).

Henry G. Lembert

Production Manager
Heintz Div.
Kelsey-Hayes Co.
Philadelphia

Useful in Steel Research

Please send a copy of your article, "Surveying the Market" (Aug. 18, Page 85). It will be useful for ideas.

Marvin W. Farrell

Market Research
Steel Co. of Canada Ltd.
Hamilton, Ont.

President Requests Reprints

The Aug. 25 issue carried an interesting article, "Explosives Form Space Age Shapes" (Page 82). I would like to receive two additional copies.

Malvern J. Hiler

President
Commonwealth Engineering Co. of Ohio
Dayton, Ohio

Useful for Foreign Visitors

Would it be possible for us to have several copies of your Program for Management article, "Finding Out What Customers Will Buy" (July 14, Page 101)?

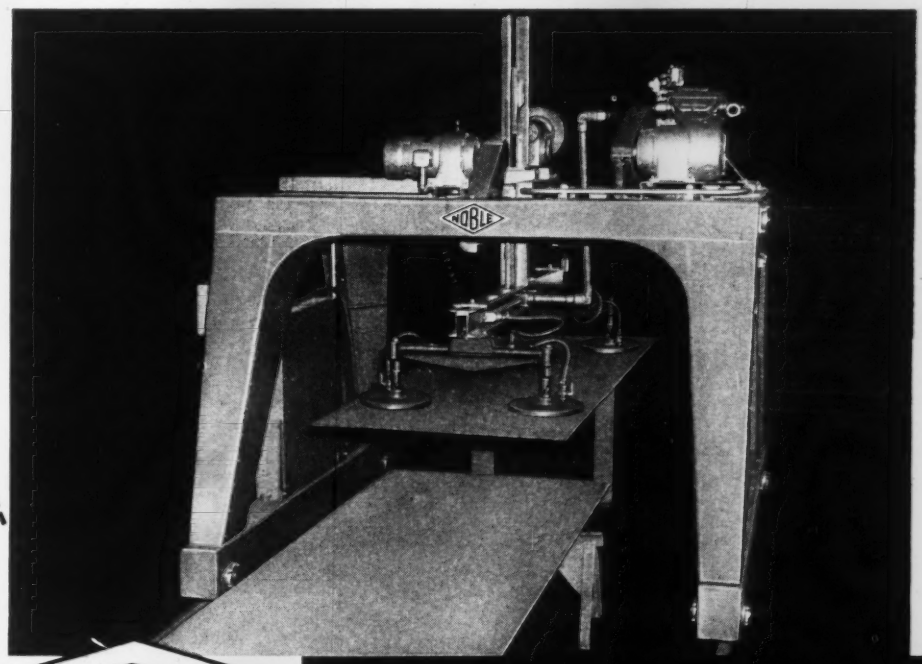
Frequently, we speak to teams of foreign industrialists on the use of U. S. government statistics in market analysis. We believe that this article, which deals with consumer preferences, will point up the use of family expenditure surveys conducted by the Bureau of Labor Statistics for marketing purposes.

Pauline B. Paro

Assistant Chief
Bureau of International Technical Co-Operation
Bureau of Labor Statistics
U. S. Department of Labor
Washington

PROCESSING PLATE?

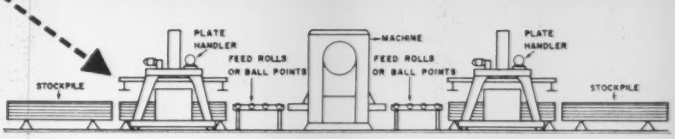
Get the production you're paying for



WITH A

NOBLE *Automatic*

PLATE HANDLING SYSTEM



NOBLE Automatic Plate Handling Systems eliminate the costly, often hazardous manual handling required in processing plate and sheet.

NOBLE handlers automatically pick up from a pile or conveyor, transport and deliver plate or sheet stock to the machine, pick up worked pieces from the machine and deliver them to piles or conveyors. Increase your profits by:

1. Reduced handling costs — no handling crews required, no prolonged crane tie-ups.

2. Better machine utilization — NOBLE automatics deliver and remove plate as fast as the machine can operate. There's no idle standby while operators wrestle a plate into position.

3. Increased production — NOBLE users report gains of 20% or more, depending on conditions, as the result of faster handling and reduced idle machine time.

THREE TYPES AVAILABLE

Standard NOBLE automatic plate handling systems are available in floor-mounted rail, overhead rail and radial transfer types. Standard capacities are 1,000, 2,000, 3,000 and 4,000 lbs. Higher capacities and special designs for specialized applications.

NEW BROCHURE AVAILABLE . . . describes economics of automatic plate handling, proper applications, typical system layouts, and all NOBLE equipment required. Write for your free copy today; please address Dept. S-10.

3

NOBLE COMPANY

1860 Seventh Street • Oakland 20, California

Republic Steel's "Bar Mill of Tomorrow"

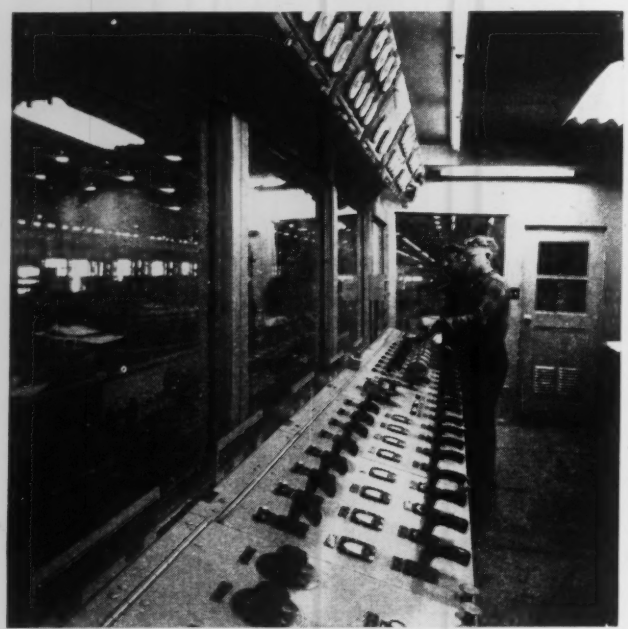
MEANS BETTER STEEL BAR SERVICE TODAY

WHITE-HOT STEEL BAR PRODUCTS are shown being run off into a cooling bed at Republic's "Bar Mill of Tomorrow" at Chicago, Illinois. Steel billets, three and four inches square, are reduced into high quality bar products at the rate of 3,000 feet per minute. Production off the mill includes torsion bar quality steels, coil spring and spring steel bar quality, cold heading and cold extrusion quality, as well as regular merchant quality. A definite advantage to users of torsion bar quality material is the fact that bars coming off the new mill will require less centerless grinding to achieve a nearly perfect round.

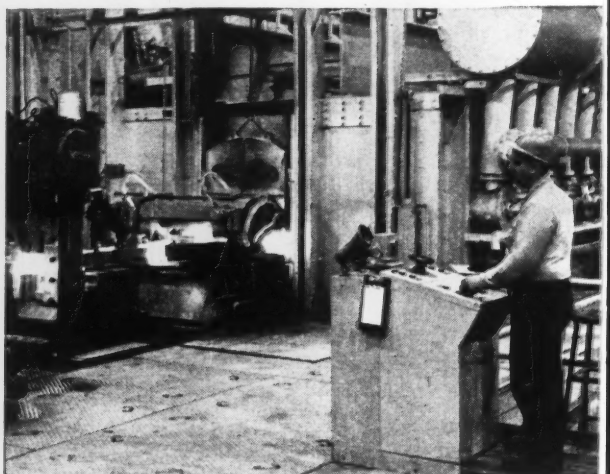
REPUBLIC STRENGTHENS POSITION AS LEADING PRODUCER OF BAR MILL PRODUCTS. The recent opening of the new 11-inch Bar Mill at Chicago, Illinois, together with other strategically located Republic bar mill facilities, will provide the most complete range of sizes and materials—carbon, alloy, stainless, and titanium—in ⅜" rd. to 10" rd. and equivalent footweight sections.

Republic is the nation's number one producer of alloy and carbon steel bars. Likewise, Republic leads in the production of special quality steels.

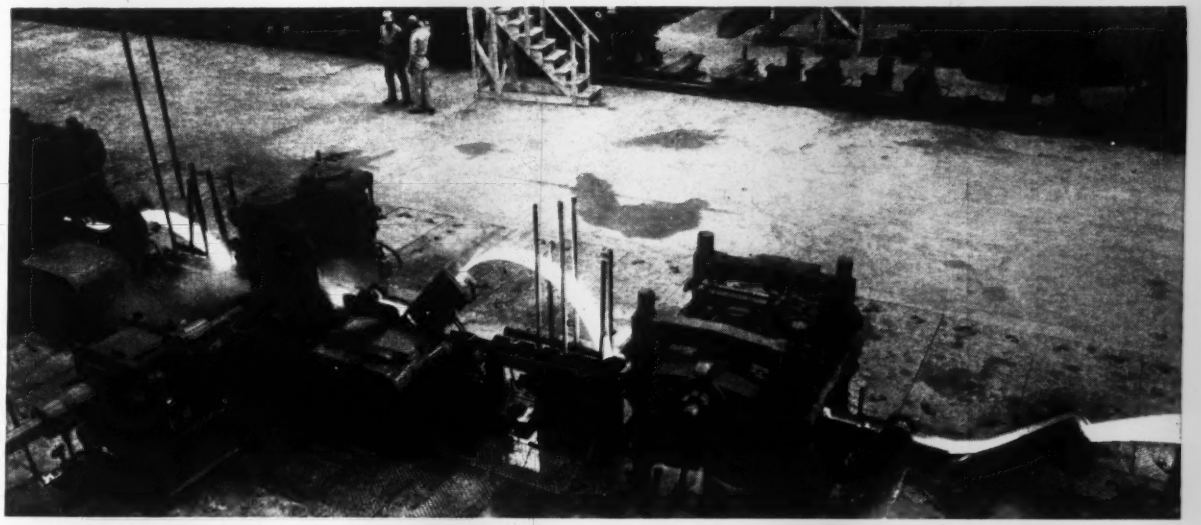
The new Republic facility incorporates all of the most advanced design features of existing bar mills—plus the addition of some unique features to help Republic meet today's exacting require-



FROM THIS AIR-CONDITIONED MASTER CONTROL ROOM, speeds of the 16 roll stands in the quarter-mile long mill are synchronized and controlled so that three- and four-inch square steel billets can be reduced in size and shape into high quality alloy and carbon steel bar products.



A FOUR-INCH SQUARE BILLET is about to start its run through the new 11-inch bar mill. After being uniformly heated in a furnace, the billet passes through a series of 16 rolling mill stands and is reduced to proper size. The mill is capable of producing ⅜- to 1¼-inch rounds and equivalent sizes of squares, hexagons, special sections, concrete reinforcing bars, and one-inch to four-inch wide flats.



VERTICAL LOOPING OF STEEL, a unique principle in American bar mill design, is shown above. As the billet passes through each set of rolls, its size is reduced and its length increased. Note vertical and horizontal rolling stands. On other mills, the steel is looped off to the side or below the mill. On Republic's "Mill of Tomorrow", the steel is looped vertically above the mill while stand speeds are synchronized.

ments for high quality. The new mill is producing high quality alloy and carbon steel bar products in heavier coil weights, and is capable of producing closer than standard tolerances.

IN THICK TIMES OR THIN, REPUBLIC STICKS BY ITS BAR CUSTOMERS. Norman W. Foy, Republic's Vice President in Charge of Sales, puts it this way. "Fair treatment to our customers has been Republic Steel's firm policy over the years. It has been our aim to build up our capacity so that we could provide more steel tonnage for existing customers as well as take on additional users. We have always considered our assurances of steel to customers to be real assurances, for we had to have the capacity to back up the orders. This is the reason for our bar mill expansion program. When you place your orders with Republic, you know that in thick times or thin, we have the capacity to fill those orders or we don't take them."

"BAR MILL OF TOMORROW" IS REPUBLIC'S $18,000,000 INVESTMENT IN THE BELIEF THAT—THE FUTURE IS GREAT IN A GROWING AMERICA. The new mill was erected as part of Republic's $200,000,000 expansion program being completed this year. This investment is proof of Republic's faith in the future. Faith that America's economic growth potential is stronger now than ever before. Faith that "The Future is Great in a Growing America."

REPUBLIC'S FAMED 3-DIMENSION METALLURGICAL SERVICE TEAMS—field, mill, and laboratory—are always available to help your personnel apply Republic's high quality bar products to your product. Carbon, alloy, stainless, and titanium metallurgists will assist in the selection, application, and processing of the right bar product for the job. There is no obligation. Mail the coupon for full facts.

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Stainless Steel Nerves by TMI

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Meanwhile, TMI never stops in its program of developing new and better ways of cold drawing stainless steel and special alloy tubing in small sizes.

We like to make the best better . . . especially when it helps you make a better product or a more satisfying profit.

The Mark of Quality TMI

- All Types of Stainless Steel—seamless and welded
- Hastelloy* alloys B,C,F,X, Multimet* (N-155) alloy, and Haynes* alloy No. 25
- One-Piece (No Weld) Round and Special Shape Bulb Capillary Units
- Multiple Diameter I.D. and O.D. Tubing to Specifications Special Shapes.

*Reg. TM of Union Carbide and Carbon Corp.

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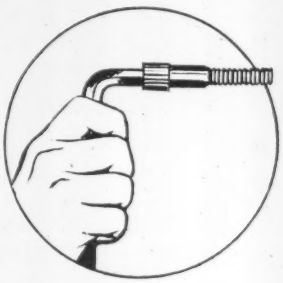

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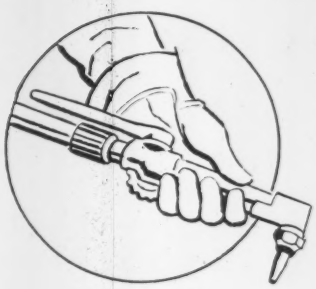
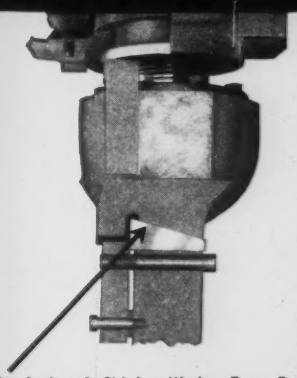


NOT THIS!

- Use wrench . . . . . not a cutting torch
- in minutes . . . . . instead of hours
- without damage . . . . die holder destroyed

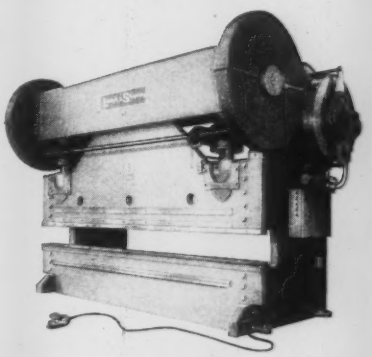


The Lodge & Shipley Wedge Type Ram Pressure Release is unusually simple and rugged in design. A heavy steel wedge has a top angle that complements a similar angle on the base of the ram pittman socket housing. Held securely by a heavy steel plate, the wedges can be released quickly to provide up to ¼" additional clearance.

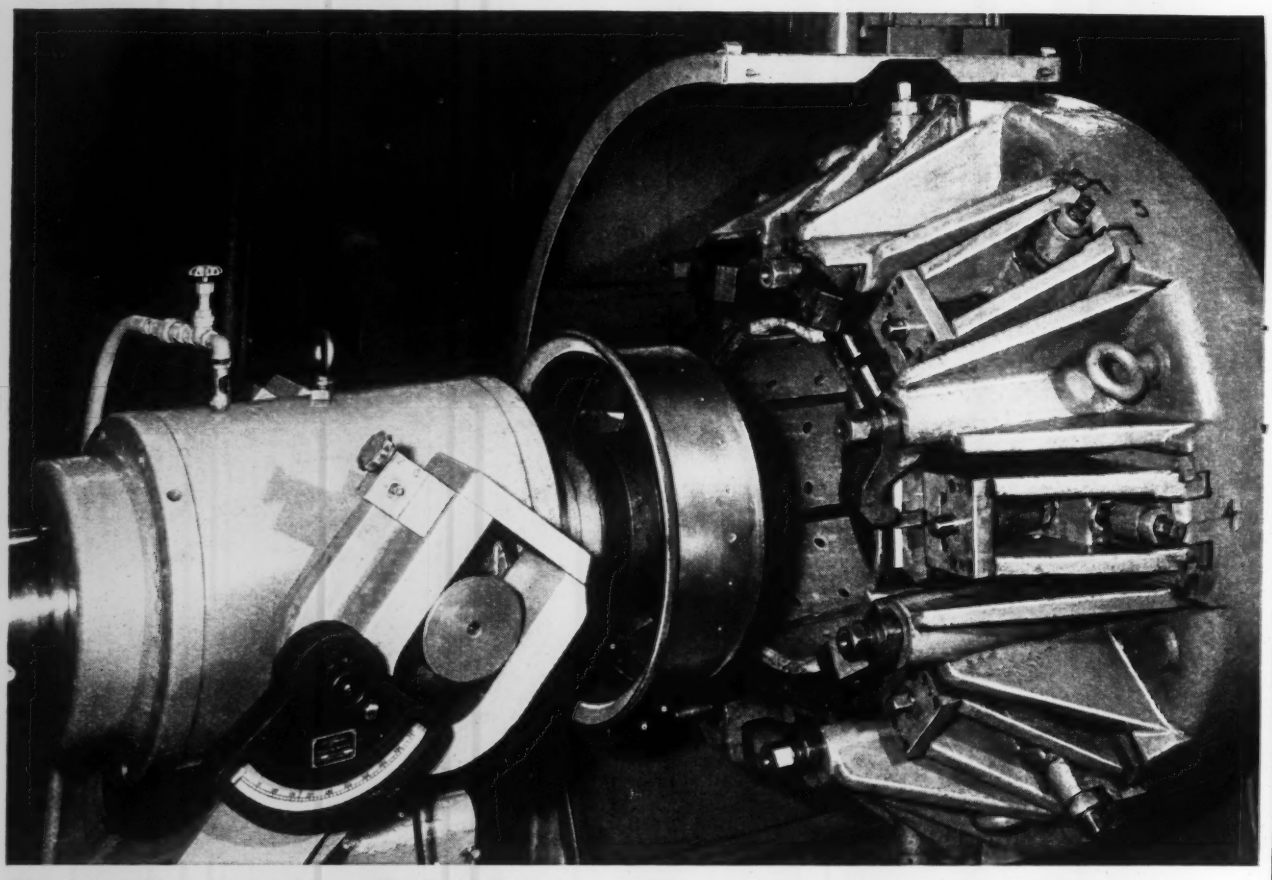
When a press brake is stalled due to improperly adjusted dies . . . do you face a short delay or near disaster?

With a Lodge & Shipley Press Brake, release of the stuck dies is a quick, simple, non-destructive matter as described in the accompanying detail.

This is but one of many outstanding Lodge & Shipley Press Brake features designed for fast, accurate, efficient and dependable press brake operation. New literature gives complete details. Write: **The Lodge & Shipley Co., 3070 Colerain Ave., Cincinnati 25, Ohio.**



Lodge & Shipley *. . . your Lodge-ical choice*



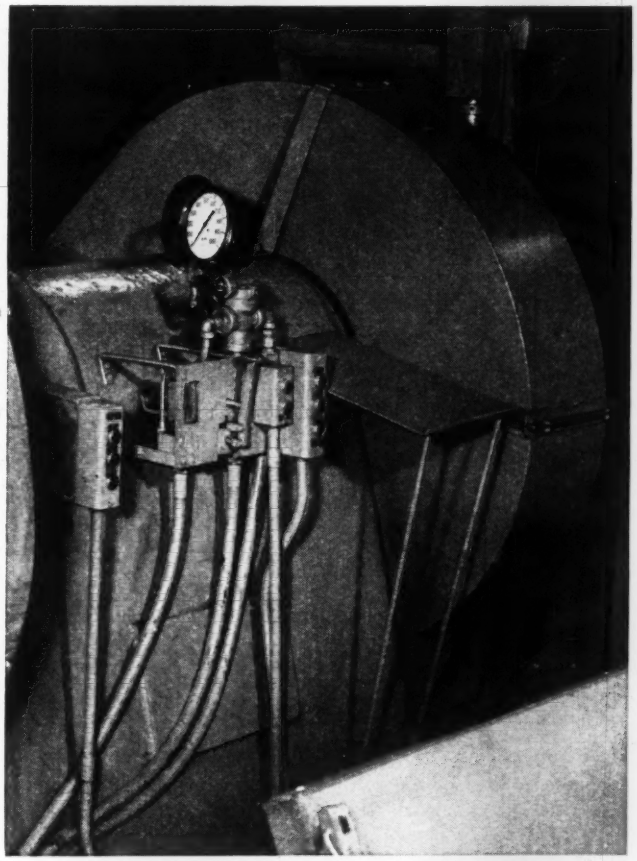
This fatigue life testing machine at The Budd Company, Detroit, puts steel products through a rugged workout. Here lightweight truck wheels of N-A-X HIGH-TENSILE *steel are subjected to constant flexing, hour after hour. Tests like this prove* N-A-X HIGH-TENSILE *adds fatigue life, permits sizable weight reductions.*

For whatever you make . . .

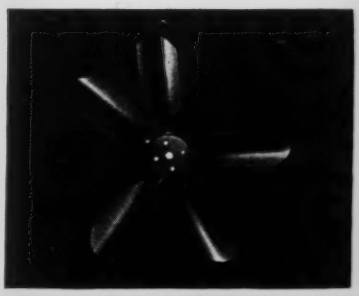
N-A-X® HIGH-TENSILE STEEL

ADDS GREATER FATIGUE LIFE

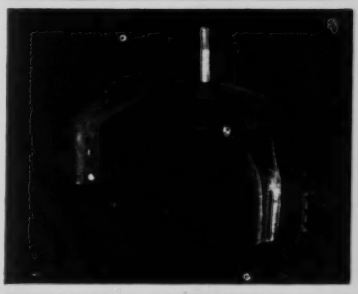
plus excellent formability–weldability–toughness



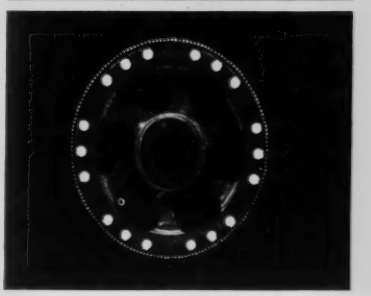
Rotating speeds and vibrations create excessive fatigue in engine fan blades. With its superior fatigue resistance, N-A-X HIGH-TENSILE *is specified in many fan constructions.*



Because high fatigue resistance is a critical requirement of motor mounts, N-A-X HIGH-TENSILE *is specified by leading manufacturers.*



Under simulated field conditions, fatigue life tests proved flex plates made of N-A-X HIGH-TENSILE *lasted up to* ten *times longer than those made of carbon steels of the same gage.*



The trucking industry and its suppliers have always looked for ways to build trucks lighter for bigger payloads, without sacrificing durability and strength.

The Budd Company found that with N-A-X HIGH-TENSILE steel, wheel weight could be cut substantially *with no loss* in fatigue life. Long experience proves that despite their lighter weight, N-A-X HIGH-TENSILE truck wheels stand up, take stress and flexing mile after mile.

The Budd Company also found that along with greater fatigue life, weight for weight, N-A-X HIGH-TENSILE offers important advantages in manufacturing. N-A-X HIGH-TENSILE welds and forms readily. And just as important for Budd customers, N-A-X HIGH-TENSILE because of its toughness resists impact to an exceptionally high degree.

CHECK THESE IMPORTANT ADVANTAGES FOR YOUR JOB:

N-A-X HIGH-STRENGTH steels—both N-A-X HIGH-TENSILE and N-A-X FINEGRAIN—compared with carbon steel, are 50% stronger • have high fatigue life with great toughness • are cold formed readily into difficult stampings • are stable against aging • have greater resistance to abrasion • are readily welded by any process • offer greater paint adhesion • polish to a high luster at minimum cost.

Although N-A-X FINEGRAIN'S resistance to normal atmospheric corrosion is twice that of carbon steel, N-A-X HIGH-TENSILE is recommended where resistance to extreme atmospheric corrosion is important.

For whatever you make, from steel shop boxes to steel wheels, with N-A-X HIGH-STRENGTH steels you can design superior performance, longer life and less weight into your products. Let us show you how.

N-A-X®
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Product Development Division, Dept. B-7

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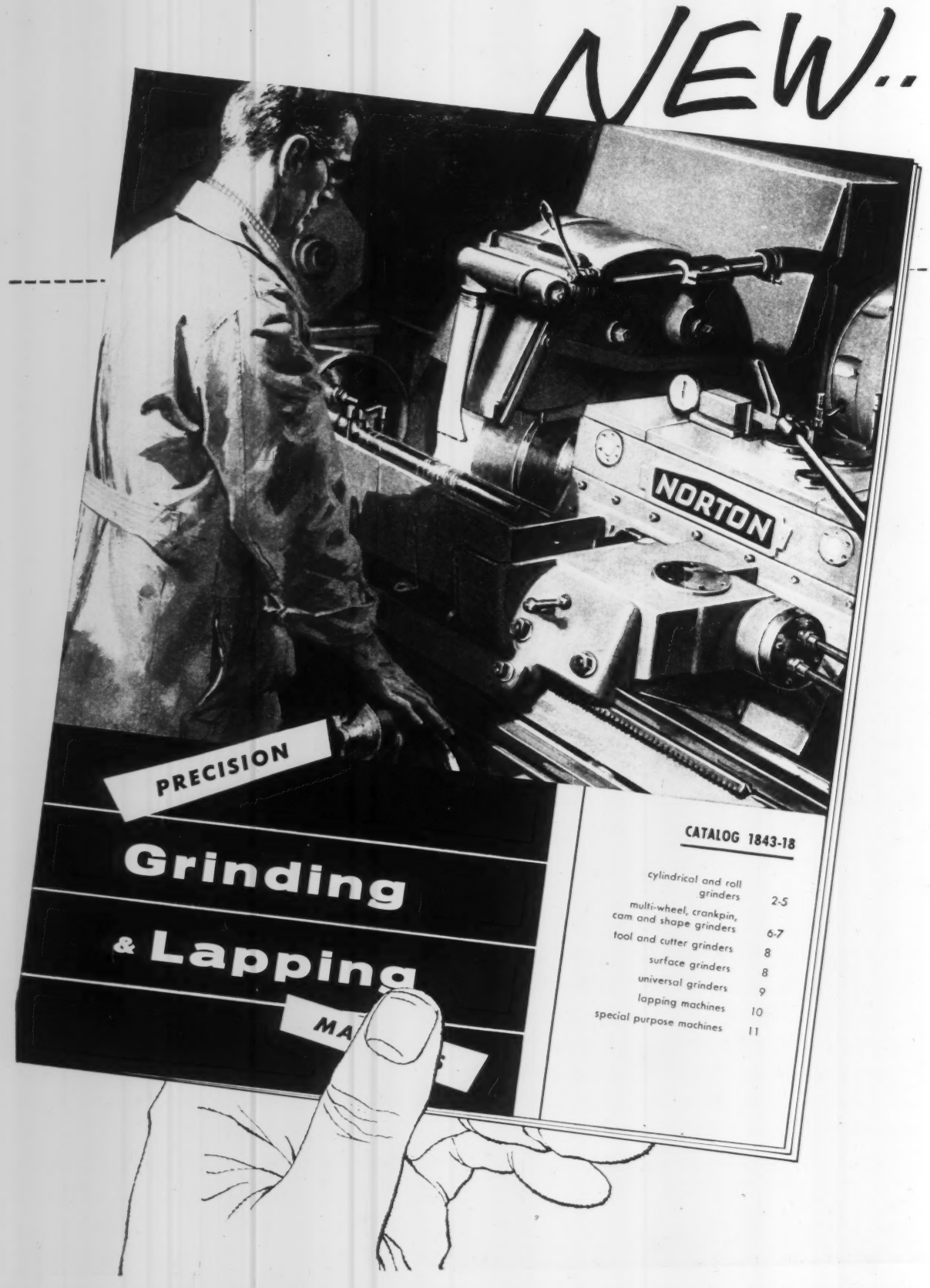
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571 Washington Blvd. at Jefferson, Chicago 6

INDIANA
G. A. Richey & Sons
1050 Broad Ripple Avenue, Indianapolis 20

LOUISIANA
Stauss & Haas, 524 Camp St., New Orleans 12
Peerless Supply Co., Inc.
701 Spring Street, Shreveport

MICHIGAN
Motch & Merryweather Machinery Co.
23520 Woodward Ave., Detroit 20 (Ferndale)

MISSOURI
English Brothers Machinery Co.
410 West Fifth Street, Kansas City 6
Blackman & Nuetzel Machinery Co.
3713 Washington Avenue, St. Louis 8

MINNESOTA
The Satterlee Co.
2200 East Franklin Avenue, Minneapolis 4

NEBRASKA
Interstate Machinery & Supply Company
1008 Douglas Street, Omaha 8

NEW YORK
Rudel Machinery Co.
1807 Elmwood Avenue, Buffalo 7
Rudel Machinery Co.
100 E. 42nd Street, New York 17
Schiefer-Philipp Machinery Corp.
39 State Street, Rochester 14
J. F. Owens Machinery Co.
1810 Erie Boulevard, East, Syracuse 1

NORTH and SOUTH CAROLINA
Jeffreys Engineering & Equipment Co.
Guilford Building, Greensboro, North Carolina

OHIO
Motch & Merryweather Machinery Co.
Kenwood & Montgomery Roads
Cincinnati 36
Motch & Merryweather Machinery Co.
1150 E. 222 Street
Cleveland 17
Motch & Merryweather Machinery Co.
1305 American Building, Dayton

To Economize, Modernize with **NEW**

NORTON

GRINDERS and LAPPERS

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Harry M. Euler Company
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PENNSYLVANIA
Machinery Associates, Inc.
325 East Lancaster Ave.
Wynnewood (Philadelphia Area)
Motch & Merryweather Machinery Co.
1315 Clark Building, Pittsburgh 22

TEXAS
Greene Machinery Co.
6300 Wyche Boulevard, Dallas
Mine & Smelter Supply Company
1515 11th Street, El Paso
Steel & Machine Tool Sales Company
P.O. Box 1716, Houston 1

UTAH
Mine & Smelter Supply Company
121 West Second, South, Salt Lake City 1

VIRGINIA
Noland Company
2700 Virginia Avenue, Newport News
Noland Company
1226 Center Avenue, N.W., Roanoke 1

WASHINGTON
Star Machinery Company
241 Lander Street, Seattle 4
Star Machinery Company
E. 415 Sprague Avenue, Spokane

WASHINGTON, D.C.
Machinery Associates, Inc.
325 East Lancaster Ave., Wynnewood, Pa.

HAWAII
Honolulu Iron Works Company
Territory of Hawaii, Honolulu
New York Office, 165 Broadway, New York 7

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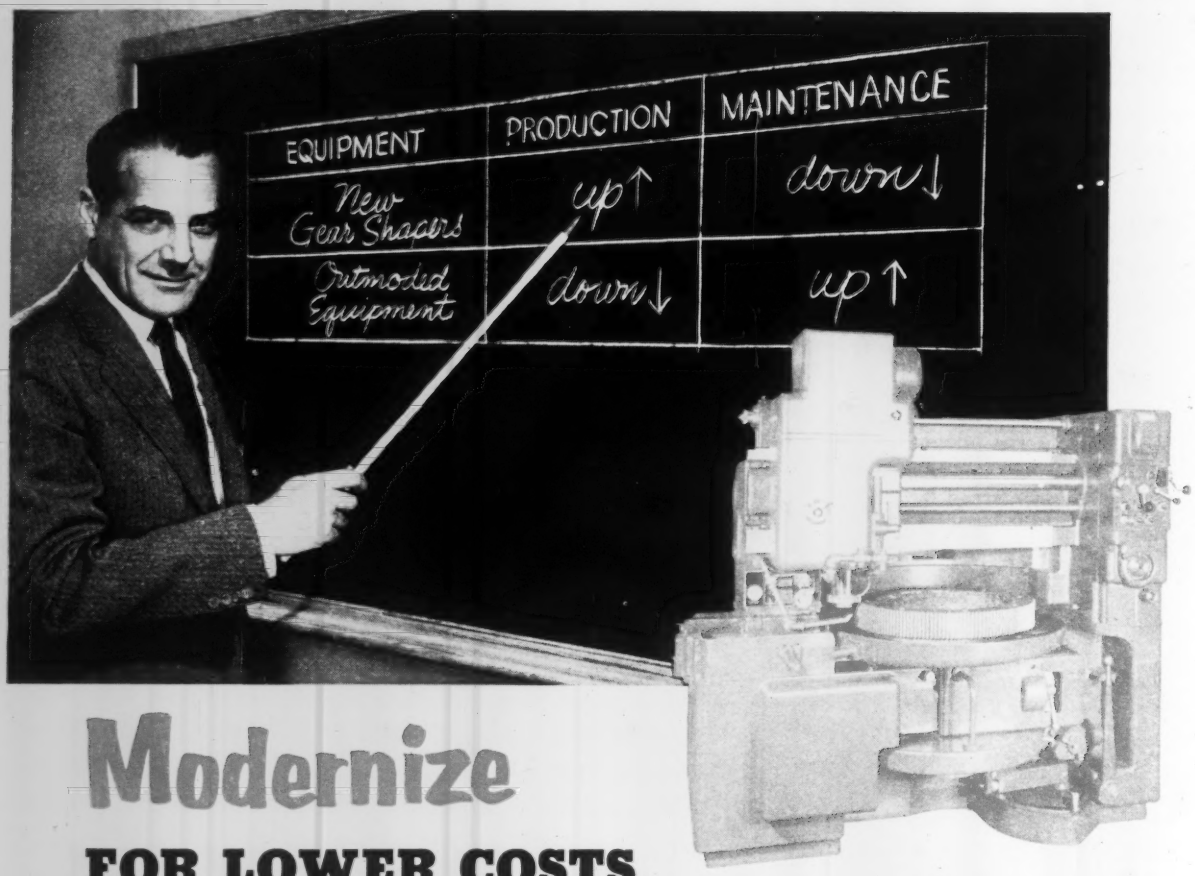
Norton Behr-Manning Overseas Inc.
Worcester 6, Mass., U. S. A.
Cable Address: *NORBEMO*, Worcester
Representatives in all principal cities of the world

Making better products . . . to make your products better

NORTON PRODUCTS Abrasives • Grinding Wheels • Grinding Machines • Refractories • Electrochemicals — **BEHR-MANNING DIVISION** Coated Abrasives • Sharpening Stones • Pressure-Sensitive Tapes

District Offices: Worcester • Hartford • Cleveland • Chicago • Detroit
In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5



Modernize

FOR LOWER COSTS

with New Fellows 36-Type Gear Shapers

Two new Fellows 36-Type Gear Shapers can produce more than three or four older machines ...and give you extra production versatility, too. In many plants, new Fellows production equipment has lowered unit production costs by more than half, earned back its cost in three years or less.

Fast, accurate, and simple to set up for a wide range of jobs up to 36" pitch diameter, the Fellows 36-Type is ideal for short runs of varied parts as well as for long runs. Rigid, husky construction permits close tolerances on internal or external spurs, helicals, and herringbones, as well as an almost unlimited variety of cams, splines, and other non-involute shapes.

Why not ask a Fellows Representative to *show* you in your plant where you can cut production costs with newer machines? Write, wire, or phone any Fellows office.

THE FELLOWS GEAR SHAPER COMPANY
78 River Street, Springfield, Vermont

Branch Offices:
1048 North Woodward Ave., Royal Oak, Mich.
150 West Pleasant Ave., Maywood, N. J.
5835 West North Avenue, Chicago 39
6214 West Manchester Ave., Los Angeles 45

THE PRECISION LINE

Fellows *Gear Production Equipment*

CALENDAR
OF MEETINGS

Oct. 6-8, Truck Body & Equipment Association Inc.: Annual meeting and exhibit, Ambassador Hotel, Atlantic City, N. J. Association's address: 1616 K St. N. W., Washington 6, D. C. Executive manager: Arthur H. Nuesse.

Oct. 8-10, American Management Association: Special conference on "Planning Products That Sell," Biltmore Hotel, New York. Information: Research & Development Division, AMA, 1515 Broadway, New York 36, N. Y.

Oct. 8-10, American Society of Mechanical Engineers and American Institute of Mining, Metallurgical & Petroleum Engineers: Joint solid fuels conference, Chamberlin Hotel, Old Point Comfort, Va. Information: AIME, 29 W. 39th St., New York 18, N. Y. Secretary: E. O. Kirkendall.

Oct. 8-10, Gray Iron Founders' Society Inc.: Annual meeting, Sheraton Park Hotel, Washington. Society's address: 930 National City-E. 6th Bldg., Cleveland 14, Ohio. Executive vice president: Donald H. Workman.

Oct. 13-15, American Institute of Electrical Engineers: Machine tool conference, Statler-Hilton Hotel, Hartford 3, Conn. Institute's address: 33 W. 39th St., New York 18, N. Y. Secretary: N. S. Hibshman.

Oct. 13-15, National Electronics Conference Inc.: Annual meeting and exhibit, Sherman Hotel, Chicago, Conference's address: 84 E. Randolph St., Chicago 1, Ill. Executive secretary: John S. Powers.

Oct. 13-17, American Society of Civil Engineers: Annual meeting, Statler-Hilton Hotel, New York. Society's address: 33 W. 39th St., New York 18, N. Y. Executive secretary: William H. Wisely.

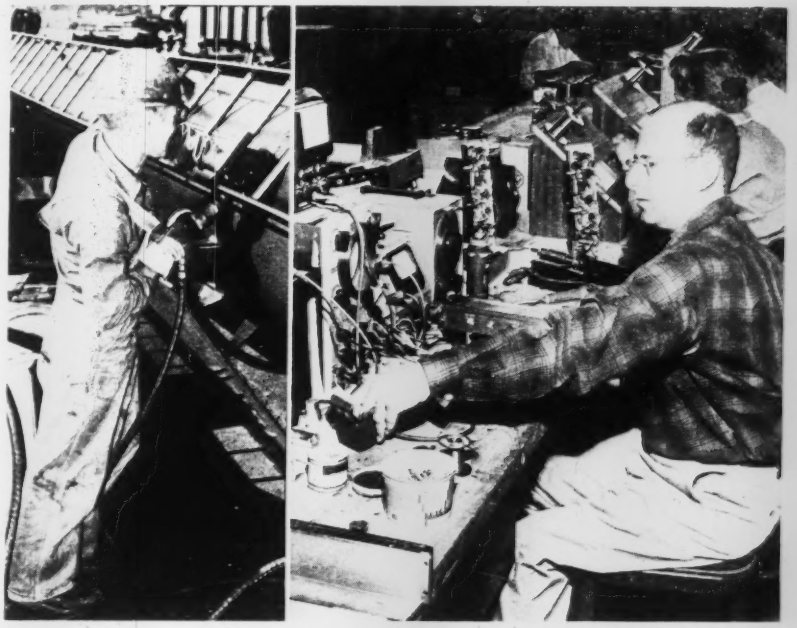
Oct. 13-16, Wire Association: Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Association's address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

Oct. 14-16, Society of Industrial Packaging & Materials Handling Engineers: Annual meeting and industrial packaging and handling exposition, Chicago Coliseum, Congress and Morrison Hotels, Chicago. Information: Hanson & Shea Inc., 1 Gateway Center, Pittsburgh 22, Pa.

Oct. 14-15, Wire Reinforcement Institute Inc.: Annual fall meeting, Park Plaza Hotel, St. Louis, Mo. Managing director: Frank B. Brown.

Oct. 15-17, American Machine Tool Distributors Association: Annual meeting, Sheraton Plaza Hotel, Boston. Association's address: 1900 Arch St., Philadelphia 3, Pa. Executive secretary: Thomas A. Fernley Jr.

Mississippi
means business

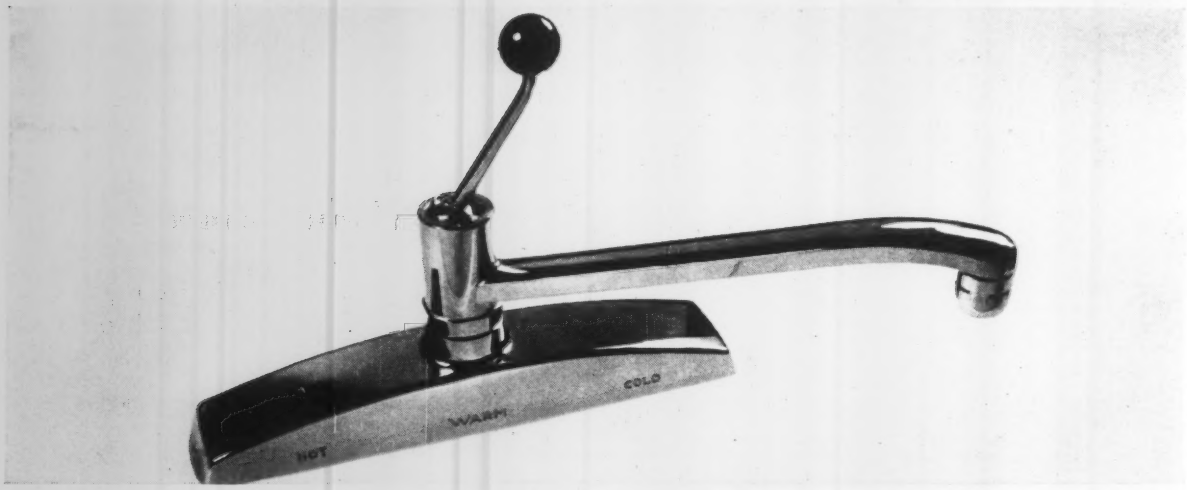


a full day's work
for a good day's pay

Many new industrial enterprises in Mississippi quickly discover there is an extra operating profit in the willing, intelligent and adaptable workers they recruit down here. Industrial jobs in Mississippi have increased at the rate of 125 per week since 1950. And new plant facilities have been constructed at the rate of one each week during the same period. Our state is creating a growing reservoir of trained and loyal workers through its vocational school program which has more than 94,000 students enrolled each year. Come to Mississippi soon for business or for travel.

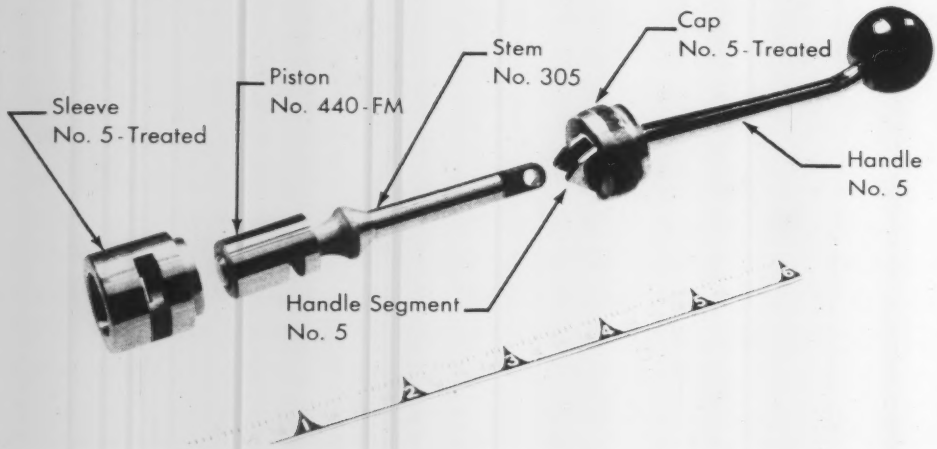
Stake your future in growing Mississippi

Executives are invited to write on their letterhead for beautiful full-color brochure describing the modern, exciting Mississippi of today. Address your request to Mississippi Agricultural and Industrial Board, Jackson, Mississippi.



for strength, corrosion resistance and sales appeal

...it had to be Stainless



In this new one-handle mixing faucet all the important working parts are made of wear-resistant, corrosion-proof Carpenter stainless steels. Once you select stainless steel by Carpenter, you can forget about corrosion. You can design for high stresses, disregard maintenance problems, stop worrying about temperature variations and be assured that fabrication will be easy. And you not only get the help of consumer-acceptance of stainless products, but also the long experience of Carpenter. From the lab work through final production, Carpenter staffmen have the knowledge and the data. Call your Carpenter representative for the engineering information on stainless that you need. The Carpenter Steel Company, 139 W. Bern Street, Reading, Pa.

Carpenter

The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.

new!

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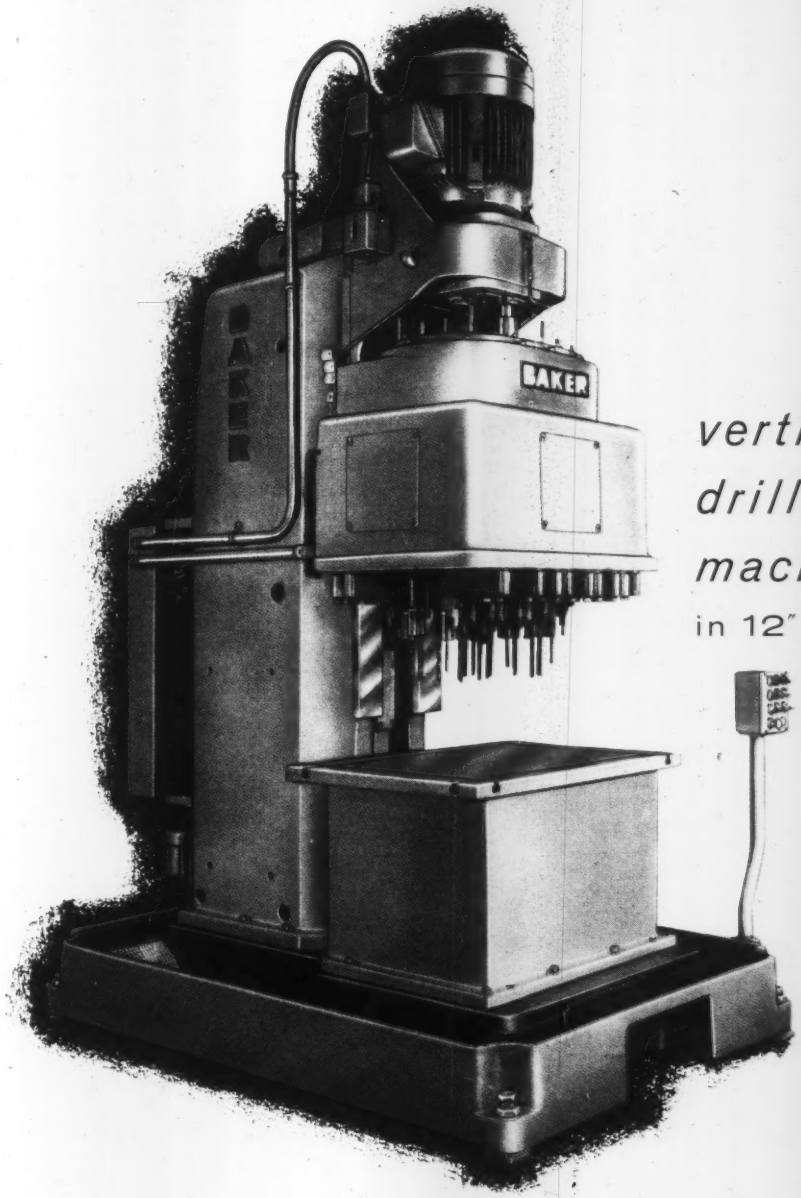


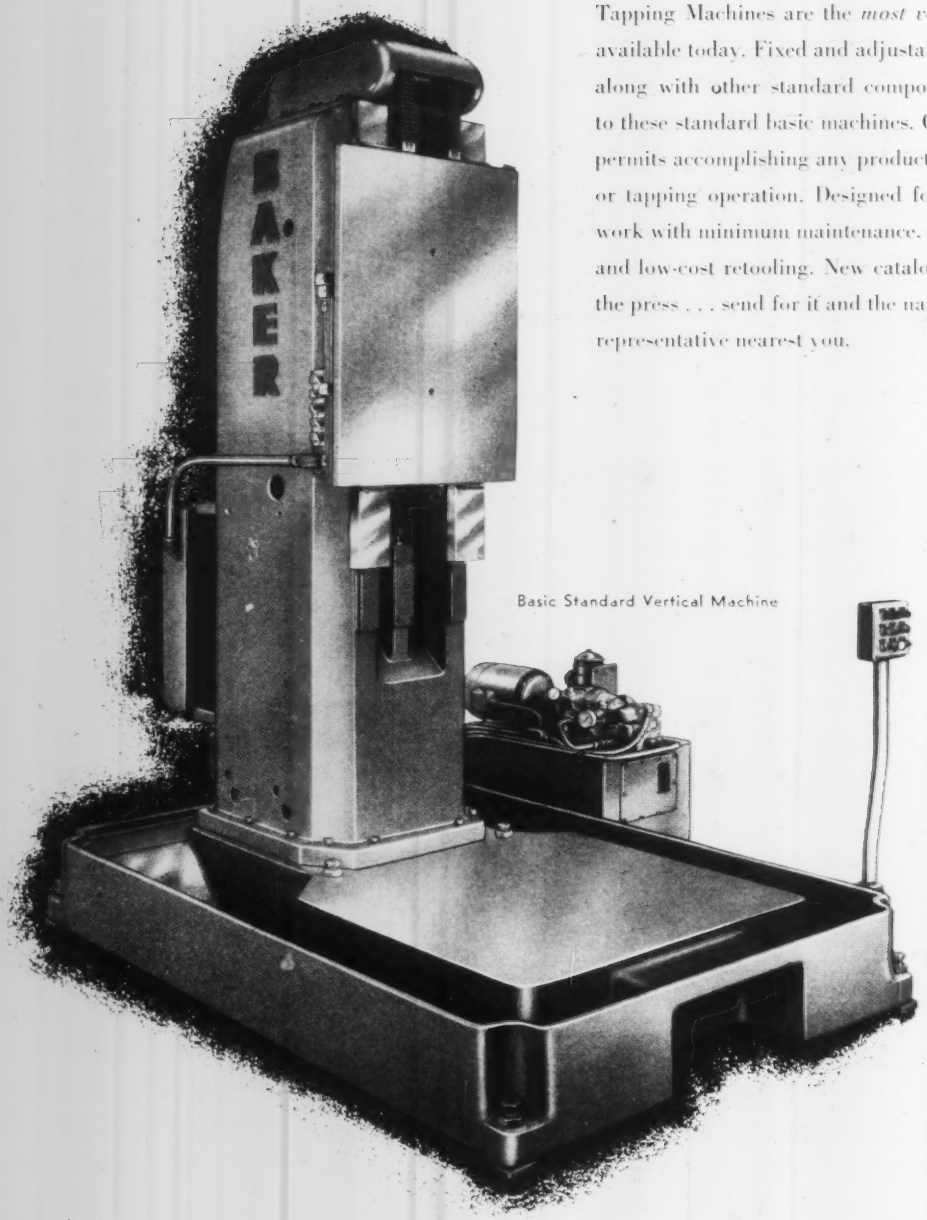
vertical hydraulic drilling and tapping machines

in 12″ - 18″ - 24″ way widths

BAKER BROTHERS, INC. TOLEDO 10, OHIO

BA ER

NEW Baker Vertical and Horizontal Drilling and Tapping Machines are the *most versatile* machines available today. Fixed and adjustable heads, along with other standard components, can be added to these standard basic machines. Complete flexibility permits accomplishing any production drilling or tapping operation. Designed for years of precision work with minimum maintenance, reduced stocking and low-cost retooling. New catalog just off the press . . . send for it and the name of BAKER representative nearest you.



Basic Standard Vertical Machine

NOW . . . COMPLETELY INTERCHANGEABLE!

To Fit 3 Sizes **Vertical** Machines

21 Adjustable Spindle Heads

27 Fixed Spindle Heads

3 Types Standard Tables

To Fit 3 Sizes **Horizontal** Machines

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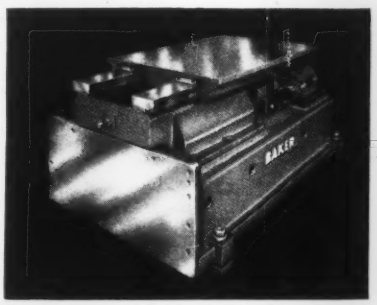
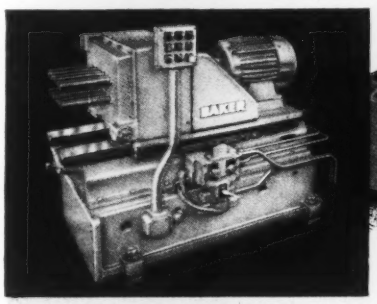
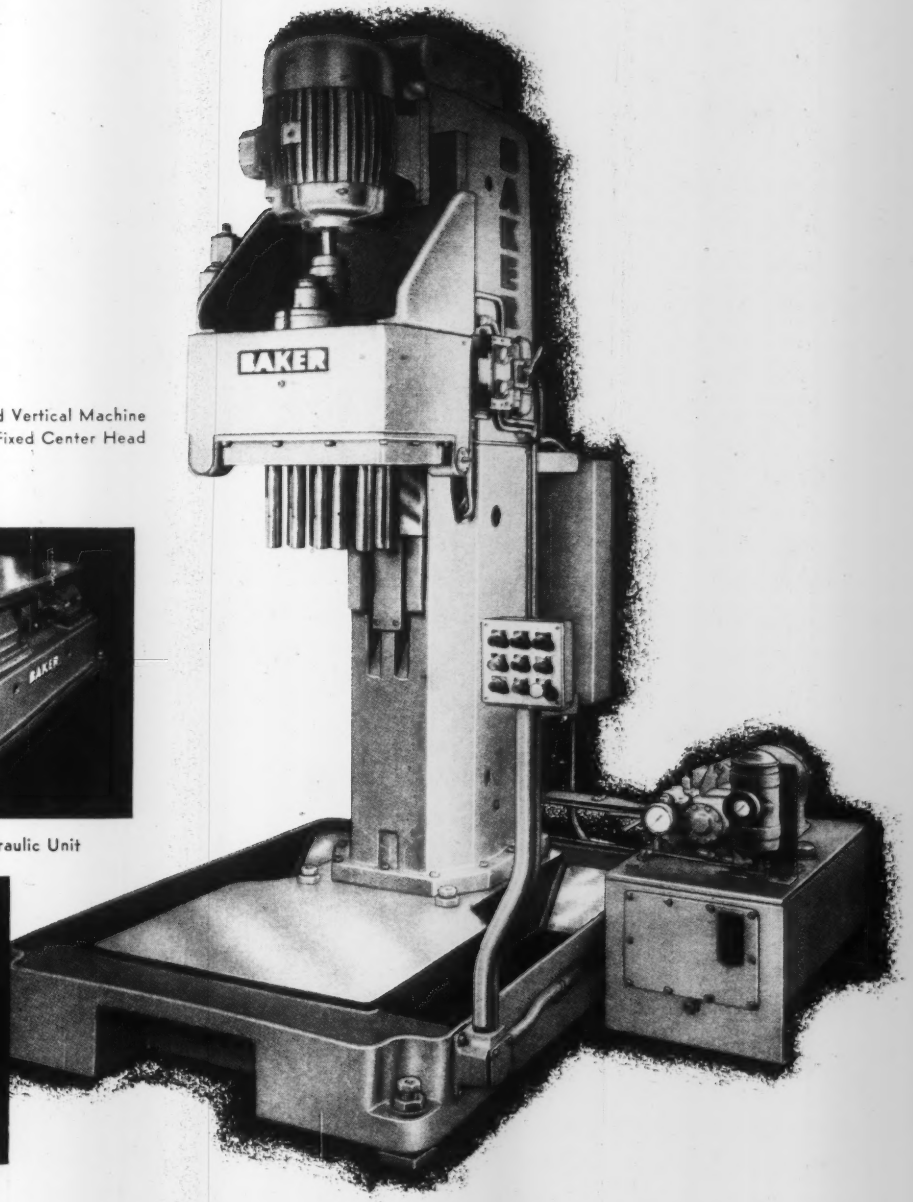


Basic Horizontal Hydraulic Unit

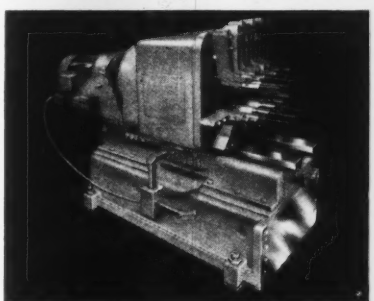


Basic Horizontal Feed Machine
With Standard Fixed Head



Basic Standard Vertical Machine
With Fixed Center Head

NEW HORIZONTAL HYDRAULIC FEED UNITS, TOO!



Basic Horizontal Feed Machine
With Standard Adjustable Head

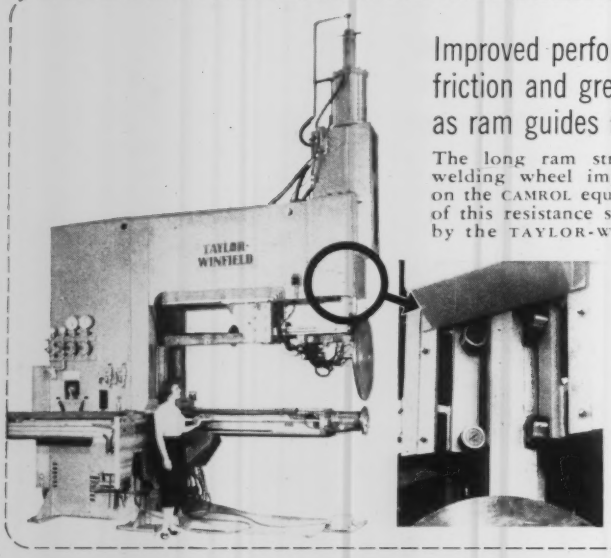
BAKER BROS., INC.
TOLEDO 10, OHIO

BEARING TIPS
by McGill

McGILL *CAMROL*® bearings cost less to increase efficiency of cam follower, guide and support roller applications

Using CAMROL CF and CYR (cam yoke roller) bearings eliminates the inconvenience of obtaining and processing component parts for built up followers. It costs less to select the proper size CAMROL bearing from stock than machine and assemble loose bolts, bushings, bearings, and snap rings.

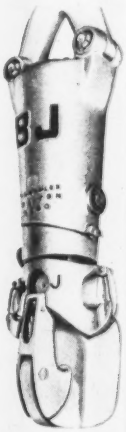
CAMROL bearings are engineered and precision built to carry heavier loads with greater accuracy and alignment. An extra heavy outer race with full roller complement on a flanged stud (or inner for CYR) offers high load and shock capacity. Smooth, dependable action with low starting friction is assured through longer machine life. Available sealed also.



Improved performance, reduced friction and greater accuracy as ram guides in huge welder

The long ram stroke and large diameter welding wheel impose severe requirements on the CAMROL equipped ram guiding device of this resistance seam welder manufactured by the TAYLOR-WINFIELD CORPORATION. The CAMROLS provide greater accuracy with less friction than was experienced with a round ram and bushing type bearing formerly used. Lubrication is simplified, maintenance reduced and performance is excellent.

The welder has a throat depth of 84" and a 12" vertical stroke of the upper ram carrying the large diameter welding wheel.

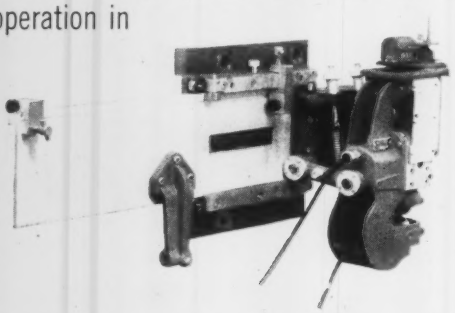


CAMROL® bearings take severe impact loads in hydraulic snubbing hooks

CAMROL CF bearings are used as hook positioner rollers in BYRON JACKSON HYDRAPLEX HOOKS. These heavy-duty (100-150 ton capacities) hooks are used in oil well drilling work. The hook positioner mechanism includes CAMROL cam followers that travel on a hardened cam track when the load is released to return the hook to its original position. The CAMROL bearings take severe impact loads in the thousands of pounds.

Ease of assembly and smooth operation in electrolimit continuous gage

PRATT & WHITNEY CO., INC., manufacturers of the ELECTROLIMIT CONTINUOUS GAGE shown here have cut costs through the elimination of built up followers requiring ball bearings, shafts, spacers and milling slots by using sealed CAMROL bearings. They are prelubricated and protected. The CAMROL bearings which travel along a vertical cross slide rail, provide smooth, easy action as the gage slides onto strip material running through the mill. No bearing replacement reported in over 10 years.



engineered electrical products

McGILL®

precision needle roller bearings

SEND FOR CATALOG No. 52-A

MULTIROL — GUIDEROL — CAMROL

McGILL MANUFACTURING COMPANY, INC., BEARING DIV., 301 N. LAFAYETTE ST., VALPARAISO, INDIANA

CF&I

BLACK SATIN

a new, smooth
oil tempered wire finish

"Black Satin" . . . that's the best way of describing the new, fine powdery oxide finish on CF&I-Wickwire Oil Tempered Wire.

It's a finish that makes our wire easier for you to work with . . . reduces your production costs . . . and is available in long 600 lb. continuous *unwelded* lengths.

BLACK SATIN

an improved Oil Tempered Wire finish available from CF&I-Wickwire

This powdery finish acts as a lubricant during your coiling and crimping operations. There are no large surface scales to "flake-off". Thus, constant readjustment of your original setup is reduced during production runs. The quality and quantity of your output will remain high without expensive downtime.

Uniformity Reduces Production Costs—Because our Black Satin finish is extremely uniform from one end of a coil to the other, from coil-to-coil, *and* from lot-to-lot, setup time is minimized. Your output per shift will increase as your equipment will not have to be altered to cope with the varying physical properties of the finish occasionally encountered in coils of Oil Tempered Wire. Scrap losses are reduced because production machinery can run continuously —"stop and go" operations are almost nil when new coils are started.

Extra Large Coils Increase Output—CF&I can further help reduce production costs through our processing and packaging facilities which make it possible to provide extra long coils that lessen the number of setups and resulting scrap loss. If your product is one which (because of production volume or physical size) requires the use of large quantities of Oil Tempered Wire, use our large coils which are available from 16″ to 72″ in diameter. A full range of sizes, grades and finishes of Oil Tempered Wire is available in 600 lb. continuous *unwelded* lengths. Straightened and cut lengths from 6″ to 24 feet (or longer) can also be supplied.

If you are not set up to handle long-length coils, smaller weight packages are available.

Color Tag Identification Assures Quality—Every coil of CF&I-Wickwire Oil Tempered Wire is color-tagged with a complete record of its processing, testing and intended use.

Once you have selected the grade of Oil Tempered Wire that's best for your purpose, you can be sure of receiving the same quality on subsequent orders.

These tags, 3 of which are illustrated, show

Heat Number_____ Size_____

Tensile Strength_____

Date_____ Coil Number_____

Test Sheet Number_____

This identification system helps simplify your job of inventory control, in-plant storage, handling, and reordering.

When You Need Steel Wire Make CF&I Your Source of Supply. Oil Tempered Wire is but one of the many types of specialty wire produced by CF&I. To meet your needs and cut your costs, they can be supplied in a variety of packages: on returnable "Spiders" holding a single continuous length of wire weighing from 2000 to 4000 lbs.; on non-returnable "Spiders" with 500-700 lbs. capacity; in fibre-drums holding up to 600 lbs. of wire; in steel-strapped or wire tied coils (200 to 2000 lbs.) and in bare or paper-wrapped coils, or in 500 to 800 lb. capacity reels.

CF&I-WICKWIRE WIRE

THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro • Seattle • Spokane **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia **CF&I OFFICE IN CANADA:** Montreal **CANADIAN REPRESENTATIVES AT:** Calgary • Edmonton • Vancouver • Winnipeg

5934

Greenlee Transfer Machines can be Reworked to meet Product Changes

The Greenlee "Rearrangeable Unit" concept of transfer machine design is becoming increasingly popular in mass production manufacturing. These machines accommodate recurring changes in product design. Year after year they guard against costly obsolescence . . . they are changed to meet your changing requirements. Get the complete story from Greenlee.

PRODUCTION MACHINERY
GREENLEE

Write for Complete Information, or Phone Rockford, Ill., 3-4881

GREENLEE STANDARD AND SPECIAL MACHINES AND TOOLS

- Transfer-Type Processing Machines
- Multiple-Spindle Drilling and Tapping Machines
- Six and Four-Spindle Automatic Bar Machines
- Hydro-Borer Precision Boring Machines
- Core Box Rollover and Draw Machines
- Specialized Woodworking Machines
- Hand Tools for Woodworking
- Tools for Woodworking Machines
- Hydraulic Tools for Electricians, Plumbers, Contractors

GREENLEE GUARDS AGAINST COSTLY OBSOLESCENCE

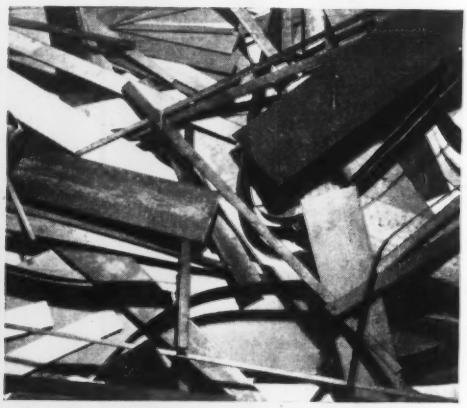
GREENLEE
BROS. & CO.

1930 MASON AVE.
ROCKFORD, ILLINOIS

Cut sheet steel costs with Ryerson service

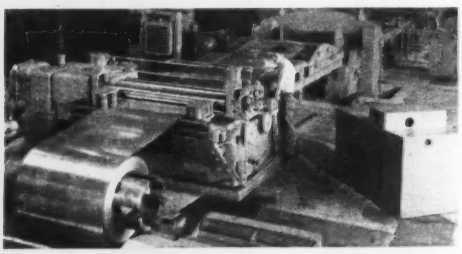
Cut inventory costs

No need to tie up capital in inventories—and valuable shop space—when you can get immediate delivery of your requirements, large or small, from large and complete stocks at your nearby Ryerson plant.



Cut scrap losses

Why pay sheet steel prices for scrap like this? When your size can be furnished from standard-width coils, Ryerson cut-to-length service gives you the important savings of a net weight price—eliminating scrap costs. In addition, mill-type slitters enable Ryerson to furnish any width requirement.



Cut fabrication costs

Ryerson stocks of hot and cold rolled sheets are quality-controlled to .10 maximum carbon content (SAE 1008). This means you can minimize, or even eliminate, the problems of variations in forming and welding quality caused by the average wide range of carbon content.

Ryerson service delivers your order tightly banded, skidded with sound lumber, to further cut your labor costs, add protection to the steel and make handling far easier.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the MILAM Steel Family

Principal Products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

Another SUB Plan Halted

The Michigan Employment Security Commission has rejected American Motors Corp.'s plan to have 1100 workers at its Grand Rapids plant collect state unemployment compensation and SUB, plus bonuses in lieu of vacations, during a three-week closedown. Attorney General Paul L. Adams ruled: Unemployment compensation and SUB displace payments to which workers would otherwise be entitled under the prior union agreement. He said it would have the effect of vacation pay being subsidized out of state funds. UAW had agreed to the new plan. AMC is studying the ruling.

Rail Transportation for Missiles Unveiled

The New York Central Railroad demonstrated a method of transporting supersonic missiles by rail at Cleveland last week. It marked the first time this mode of transport could be made free enough of shock and jar to permit shipment of missiles without damage to sensitive instruments. A full-scale (16,000 lb) model of a missile was used.

Fabricated Steel Shipments Up in August

August shipments of fabricated structural steel climbed to 298,000 tons, 3 per cent above those of the previous month, reports the American Institute of Steel Construction. The industry shipped 2.5 million tons during the first eight months, 11 per cent under the figure for the corresponding period last year. The AISC says backlogs in the industry as of Aug. 31 totaled 2,199,074 tons. Of that amount, 1,199,860 tons are scheduled for fabrication in the fourth quarter.

Electronics Procurement Hits $23 Billion

Electronics procurement by the Defense Department during fiscal 1958 (ended June 30) totaled $4.05 billion, says the Electronic Industries Association. The association reports expenditures in the last three months of the fiscal year hit $1.18 billion, compared with about $970 million in the previous three-month period. Cumulative spending by the Department of Defense for electronics since fiscal 1951 totals almost $23 billion, say association officials.

Orders for Heating Equipment Still Down

In August, new orders for industrial furnaces hit $3.5 million, only 10 per cent under the volume in the same month last year, says the Industrial Heating Equipment Association Inc. New orders so far this year amount to $26.5 million, vs. $43.2 million in the first eight months of 1957. New orders for induction heating equipment hit $383,000 in August, 24 per cent

under the previous month and 72 per cent lower than the same month in 1957.

Building Costs: Crouched for a Jump?

George A. Bryant, chairman, Austin Co., Cleveland, joined other construction company executives in predicting a hike in building costs before too long. Construction charges held steady in the third quarter due to tighter pricing and some boosts in productivity. Prices of some building materials and components also are down slightly.

For Farm Equipment Makers, Good Growing Weather

Producers of farm equipment attending the annual meeting of the Farm Equipment Institute in Atlantic City, N. J., last week predicted a continuation of sales increases in 1959. This year's sales may wind up 10 to 15 per cent ahead of 1957's. Improvement is based on generally good crops, the trend to larger farms (which leads to higher average gross receipts), and better farm income. But equipment makers warn that expected price boosts on their products could weaken the market.

Coming: New Motor Design Concept

A. O. Smith Corp.'s Electric Motor Div. will shortly introduce a new self-cleaning switch for electric motors that "will end contamination-caused faulting of starting switches," claims the company. The starting switch, capacitor, actuator, thermostat, and terminal panel will be encased in a capsule.

Chrysler Favored in New Pact

Chrysler won at least two important side concessions in its new contract. 1. The old Briggs contract (a thorn in Chrysler's side since it was inherited) will be phased out by December, 1959. Meanwhile, the ratio of stewards to workers will be increased. It was 29:1 (vs. about 250:1 at Ford and GM). 2. Strike provisions were tightened considerably. Authorizations will expire in 60 days unless they are extended by an agreement between the local union and UAW's executive board. The union also promised to give the company more definite notice of strike issues. The union won at least a partial victory on the seniority question. Plant-wide (rather than department-wide) transfer rights were granted. And workers with 12 years or more seniority will be able to move to other plants in the area.

Straws in the Wind

Indonesia's Premier Djunda is negotiating with Russia to build two steel plants that would use imported scrap and pig iron . . . Aluminum Co. of America is marketing a new line of aluminum magnet wire that's expected to compete with copper . . . Bethlehem Steel Co. relighted another open hearth at Lackawanna, N. Y. . . . A mid-September survey of employer hiring plans, conducted by Labor Department, points to higher employment levels.

NOW MORE THAN EVER

MARVEL HIGH SPEED EDGE HACK SAW BLADES

should be YOUR FIRST CHOICE

This is no time for "second-best" performance from your hack sawing machines. Today, every cut you make on a hack saw should be done as quickly, accurately, and economically as possible.

The *blades* you use can often mean the difference between mediocre work and top performance from your hack sawing machines. Here are 3 big advantages unbreakable MARVEL High-Speed-Edge Hack Saw Blades can bring to your cutting-off operations:

1 HIGHER PRODUCTION . . .

MARVEL High-Speed-Edge Blades are shatterproof and can be worked harder and faster than any other blade. They will withstand the highest speeds and heaviest feeds attainable on any hack sawing machine with complete safety. Machine operators working with MARVEL Blades naturally apply greater tensions, feeds, and speeds because they know they are safe from personal injury accidents. The result is faster cutting-off.

2 GREATER ACCURACY . . .

MARVEL Blades can be safely tensioned from 200% to 300% more taut than ordinary blades. Higher blade tensions produce greater rigidity of the high-speed-steel cutting edge, resulting in maximum attainable accuracy of cut-off blanks.

3 LONGER BLADE LIFE . . .

Each MARVEL High-Speed-Edge Hack Saw Blade is triple tempered to assure maximum toughness of the cutting edge. MARVEL Blades not only give you longer life, they assure a more efficient cutting life and lower blade costs.

Why gamble? Demand MARVEL Blades by name, and be sure you're getting the best blades on the market. Leading Industrial Distributors have them in stock.

B-1123

Write for the new MARVEL Cutting Tool Bulletin and the name of your nearest MARVEL Distributor.

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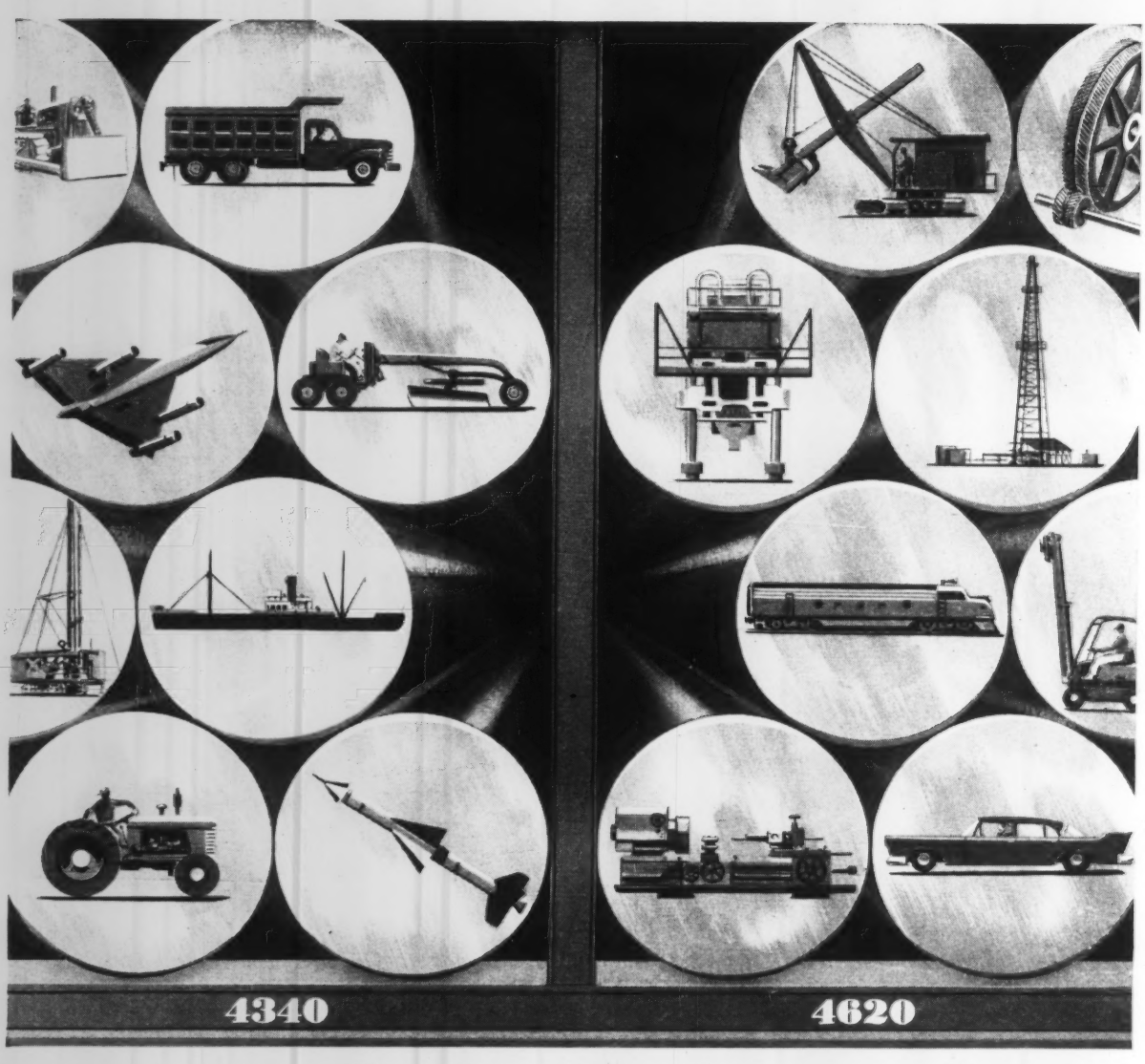
MARVEL *Metal Cutting* SAWS
Better Machines-Better Blades



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look to these two general purpose steels to standardize, simplify, and save money!

4340 THROUGH-HARDENING

4340 stands alone among medium carbon steels in its ability to provide maximum strength, ductility, toughness and resistance to fatigue in parts of medium to heavy cross section.

4620 CARBURIZING

4620 is a carburizing type that has consistently proved itself the ideal steel for a wide variety of carburized parts. 4620 is easy to carburize and has a minimum tendency toward distortion in heat treatment.

AMERICAN STEEL WAREHOUSE ASS'N.

Easy to Get *. . . Both these steels are carried by many Steel Service Centers from coast to coast* . . . ready for delivery on a "next door" basis. For a list of names and addresses of Steel Service Centers that carry AISI 4340 and 4620, write us.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street INCO New York 5, N.Y.

See you at the Metal Show... Booth 445

Is 'Soft Sell' Out?

For a number of years we have been hearing about "soft" or "low pressure" selling as the modern approach to getting business.

Supposedly, it has taken the place of the strong-arm tactics of the old time, high pressure salesman who applied the "hard sell."

He went on the road armed only with a quick wit, a fat expense account, and a minimum of product information.

He played the angles, but he asked for and got the orders.

The old-time salesman is now pretty much a myth. In his place is a new type salesman. Chances are he has been aptitude tested and given a sales training course in the home office. On the road, he is probably fortified with bushels of promotional material and backed up by a service organization.

It is his job to make himself known to the company's customers and prospects.

His objective is to lead them into making purchases but not to press them too hard.

The soft approach worked well during the lush postwar years when customers were eager to buy most anything.

But with the return of genuine competition, buyers have become more sophisticated.

For the first time in years, they are in the delightful position of being able to use qualitative judgment in choosing precisely the product that will best suit their needs.

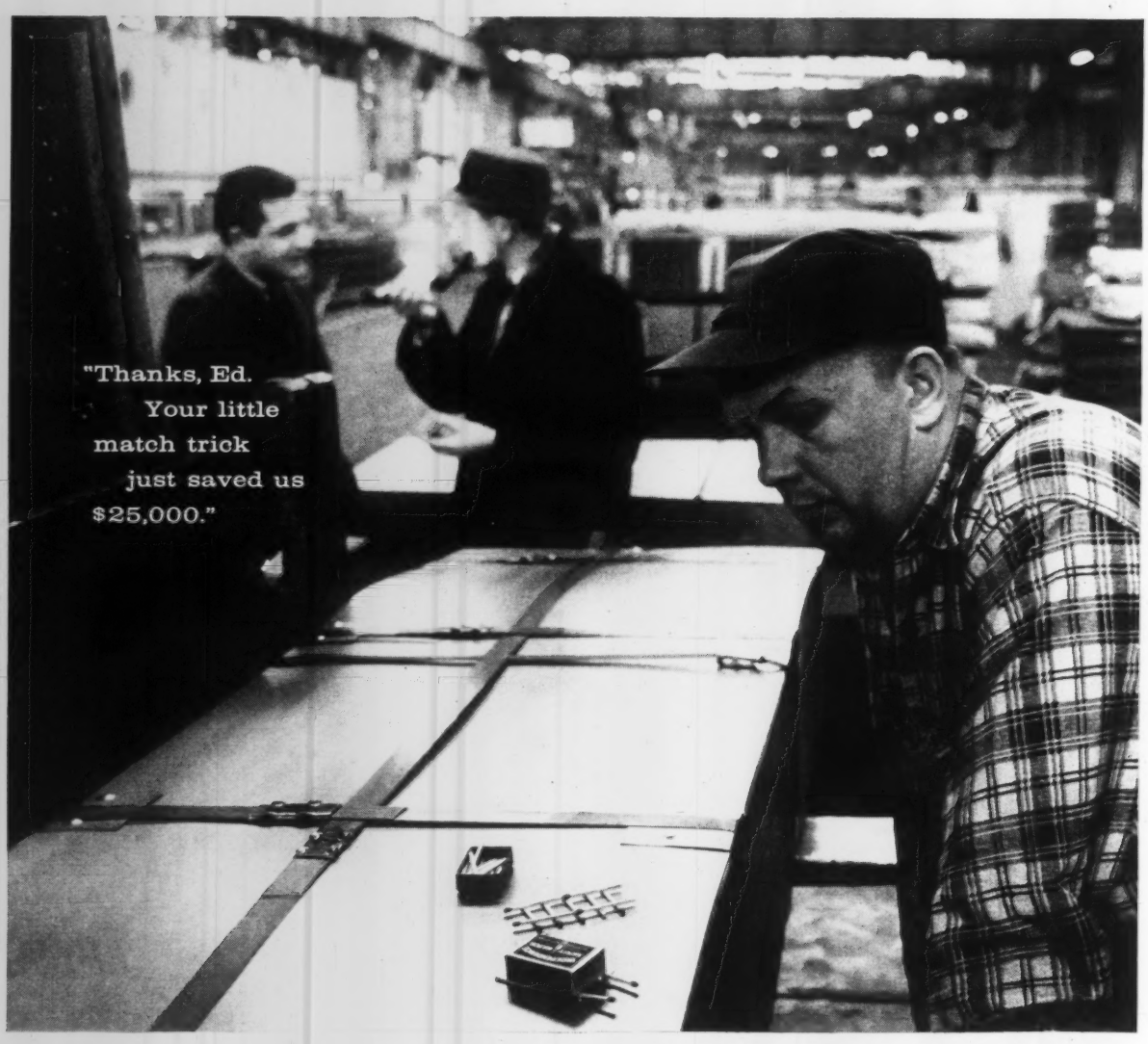
Sales organizations still clinging to the "soft sell" are finding, too often, that it is degenerating into the "no sell."

Selling today requires more than the general sales patter and the gimmicks supplied by the home office.

The salesman needs to apply some of the old-time strategy in determining what the customer wants, convincing him, and asking for the order.

For successful companies, the "soft sell" will give way to the "firm sell."

Irwin H. Such
EDITOR-IN-CHIEF



Changing to a seemingly more efficient method may not always add up to the best answer. For example, new packaging instructions solved a handling problem for a large user of cold rolled sheets, but created a new problem by adding about $3 per ton to their steel cost.

Their lifts of steel had been coming in on crosswise skids, and when the fork-truck picked them up the ends sagged. This made handling difficult and hazardous. To overcome this problem they decided to have their sheets packaged on solid platforms which would provide support. This solved the handling problem, but the added cost bothered Ed Robinson–one of Inland's packaging and loading specialists.

Visiting the user's plant, Ed watched the unloading operation and came up with another idea, which he demonstrated with matches: "Why not order your sheets packaged on lengthwise skids?" he asked. "Inland's shipping department will place wood blocks on the truck bed before loading your steel. Then your fork lift truck can get under the lifts easily–and you won't have to pay extra for special platforms."

Some people might call Ed's concern a bit out of the ordinary. At Inland we think of it as normal follow-through. Whether it's help in specifying the right kind of steel for the job, advising on production procedures or aiding with material handling, Inland's sales and field representatives are constantly working to provide their customers with a complete steel service.

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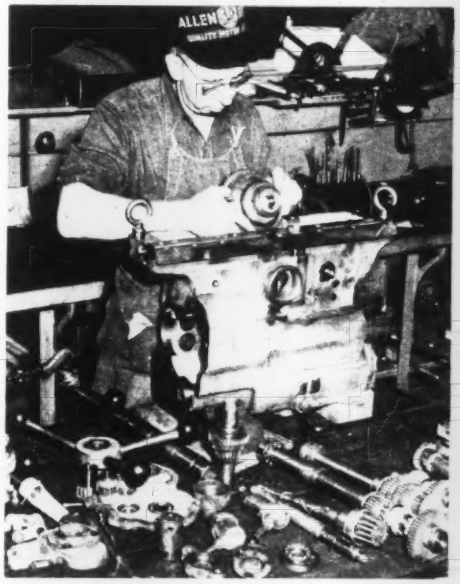


Gisholt Machine Co.

Machine Tool Builders Report . . .*

- **86 per cent are rebuilding used equipment.**
- **64 per cent actively solicit such business.**
- **63 per cent also rebuild in nonrecession times.**
- **44 per cent solicit rebuilding jobs in good times.**
- **42 per cent intend to increase such activity.**

*Percentage of respondents to STEEL's survey.

Rebuilt Tools Bridge Industry Slump

Manufacturers of machine tools are soliciting such jobs as one answer to falling profits. Machinery users can benefit by renovating equipment with minimum outlays

MACHINE TOOL builders have a way to bridge the recession, and it may pay their customers to help them do it. The answer: Rebuild machine tools for customers who can't (or won't) buy new equipment.

Tool business is still slow (see STEEL, Aug. 11, p. 77), and no program is expected to create a boom overnight. During the first half, new orders for cutting type machine tools hit $139.9 million, vs. $316.2 million in last year's first six months. Industry experts expect the fourth quarter to be just about like the first three.

Albert S. Burgoyne, vice president for manufacturing of E. W. Bliss Co. (speaking about machinery and equipment), predicts that sales will hit $45 billion by 1967. But he warns of some lean years in the interim. Orders this year are about 15 per cent under 1957's. Next year's are expected to be only about 8 per cent under '57 figures, he says.

Builders Surveyed—Machine tool builders know they cannot expect another wave of expansion before the 1960s. Replacement business will be their bread and butter. Rebuilding can help customers who are finding capital harder to get.

STEEL contacted 179 members of the National Machine Tool Builders' Association and received 99 answers. Of the respondents, 86 report they are accepting orders to rebuild machinery.

Some firms report they are refusing to take such business and some of those doing rebuilding aren't happy about it. One such reply comes from a midwestern firm: "We are rebuilding, but we don't go after the business, and I doubt that anyone else would have this undesirable work in his plant in normal times."

Another says he rebuilds, but "only on a limited basis for the attainment of specific benefits in related sales." More simply, some firms rebuild only when it makes a customer happy enough to buy something else.

But many machinery makers are eagerly taking all the rebuilding jobs they can find. Of the 99 firms replying to STEEL's survey, 64 actively solicit rebuilding business; 63 rebuild in good times or bad and push it harder when activity is at a minimum; 44 indicate solicitation (in varying degrees) of such business in nonrecession times.

Capacity Involved—Respondents report that 0.5 to 30 per cent of their income comes from rebuilding. The average is about 10 per cent.

Two Methods—Most rebuilding is done on order. A customer has a

machine that is no longer in working order. The machine tool builder renovates it and ships it back.

Another plan: Gisholt Machine Co., Madison, Wis., (one of the firmest advocates of rebuilding) is one of ten respondents which will sell rebuilt machinery for a set purchase price or at a price less the value of a trade-in. Most machine tool builders shy away from the practice. They'll rebuild a customer's machine, but they don't want to sell used tools.

Nearly all firms doing rebuilding will guarantee the reworked equipment. Warranties range from "good working condition" to a total guarantee on workmanship and new parts. Costs include dismantling, overhaul, and replacement of parts no longer usable. Final prices include transportation, labor, shipping, and painting.

Latest improvements can be added at customer request (at extra cost). Again, some makers won't do it. They believe updating can cut into new machine sales. But the majority will modernize older machines as much as possible. As one executive put it: "Hell, we're glad to update it. Why not? We get full markup on the parts."

How Much?—It is difficult to determine the cost of rebuilding the average machine tool simply because there is no average. Variables include type of machine, degree of wear, new equipment to be installed, and obsolescence. One builder says: "We'll rebuild any equipment our customers want us to, but some jobs might cost as much as 150 per cent of the price of a comparable new machine."

That example is not representative, but it points up the obsolescence of some equipment that perhaps should have been replaced years ago. Most builders indicate that a typical rebuilding job will cost the customer 40 to 60 per cent of the cost of a new machine doing the same job.

Hamilton Doubles Capacity

Hamilton Watch Co. will double the capacity of its instrument manufacturing plant in Denver. Reason: The firm received $5.5 million worth of orders from Hughes Aircraft Corp. for a new timing system used in the Falcon missile.

For aircraft and missile makers . . .

Less Defensework in '59

	Fiscal Year (Billions of dollars) 1959	1958	Change
DEFENSE EXPENDITURES			
Total	40.9	39	+1.9
For aircraft and missiles	10.9	11.2	−0.3
For research and development	2.4	1.7	+0.7
DEFENSE OBLIGATIONS (New orders)			
Total	45	43	+2
For aircraft and missiles	11.7	12.3	−0.6
For research and development	2.81	1.89	+0.92

Source: Aircraft Industries Association of America Inc.

CASH OUTLAYS by the Defense Department for aircraft and missiles in fiscal 1959 will be about $300 million less than they were in fiscal 1958, reports Aircraft Industries Association of America Inc., Washington. The decline will come in spite of an estimated $1.9 billion rise in total defense expenditures.

Obligations (new orders) show the same pattern. AIA estimates new orders for defense aircraft and missiles in fiscal 1959 will drop $600 million below the fiscal 1958 figure.

Reason—Military plane production continues to decline: 6800 were built in 1956; 5500 in 1957, estimates AIA. A spokesman expects a similar decrease this year.

Biggest share of the over-all increase in defense spending is earmarked for research and development (see table). The balance will go for military construction, ships, electronics and communications, and operations and maintenance.

Another Ill—Adding to the industry's woes is a recession-forced drop in purchases of civilian aircraft. Only 501 were shipped during July, 1958, reports Department of Commerce. That compares with 589 in June and 525 in July, 1957.

Backlog Lessens—Unfilled orders for aircraft, engines, and propellers amounted to $13.7 billion at mid-year, AIA reports. That's a 4 per cent slide from the Mar. 31 figure and a 16 per cent drop from the mid-1957 mark. Military orders represent 69 per cent of the aircraft backlog, 78 per cent of the engine backlog, and 73 per cent of the propeller reserves.

Labor Gains — Average weekly earnings in the aircraft and parts industry hit a peacetime high of $103.22 in June, 1958, reports Bureau of Labor Statistics. Reason: Average hourly earnings rose to $2.53, and weekly hours averaged 40.8. The industry called back 10,000 workers in June.

Appliance Outlook Improves

Ground swell of optimism follows reversal of downtrend in August. Most industry officials see substantial gains next year. Steel demand keeps pace

APPLIANCE MAKERS are happier about sales prospects than they have been for nearly two years.

Next year will see the recovery of much of 1958's losses for many household appliances. The uptrend started in late summer, following a deliberate campaign to cut inventories to the bone. Within the last two months there has been a ground swell of optimism based on the volume of orders, introduction of new models, and some hefty promotion campaigns.

Listen to Spokesmen — Here is what some representatives of the industry are saying about 1959 prospects:

Herman F. Lehman, head of General Motors' Frigidaire Div., Dayton, Ohio: Industry sales next year will be up about 7 per cent over the 1958 level.

Edward R. Martin, director of marketing and statistics, Gas Appliance Manufacturers Association Inc., New York: The optimism noted in the industry survey last August (see STEEL, Sept. 15, p. 115) has increased. If the same manufacturers were polled today, they would probably raise their sights for 1959.

Guenther Baumgart, president of the American Home Laundry Manufacturers' Association, Chicago: In recent visits to producers' plants, I have run across cases where the manufacturer is unable to keep up with demand for certain models. Some have fewer units of popular models in their factory warehouses than they have dealers in the field.

C. A. Brewer, manager of trade association relations, Appliance & Television Div., General Electric Co., Louisville: Industry sales of electrical appliances in 1959 should total 18,460,000 units, compared with 16,960,000 units this year. (See Page 57.) This includes refrigerators, freezers, ranges, water heaters, washers, dryers, washer-dryers, dishwashers, air conditioners, and television sets, all of which will show gains.

Firmer Tone—Another industry official told STEEL he would like to speak officially for his company, but "we've come a cropper so many times in the last two years that we are shying away from predicting. Unofficially, though, our sales outlook is brighter than it has been in 20 months. In August, we bettered the year-ago month for the first time in two years—and August, 1957, was one of our better months. We expect to end the year much stronger than we entered it."

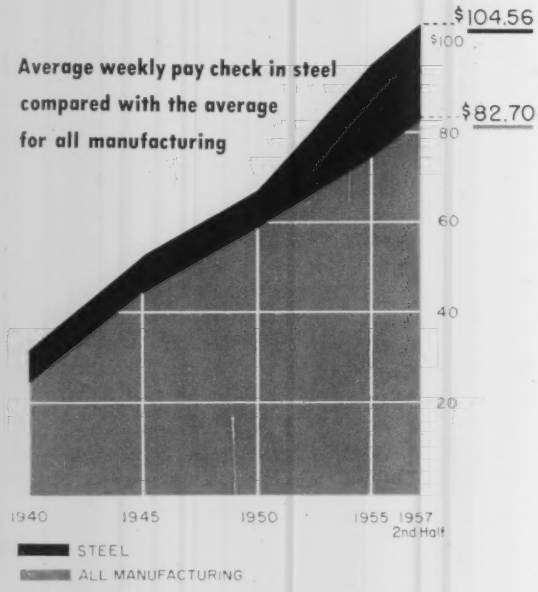
Translation into Steel—The kickup in appliance production has been one of the significant factors in the gradual buildup in steel output, and it should be one of the sustaining factors next year.

In the Pittsburgh area, steelmen report that appliance makers' orders are coming in fairly strong. Wheeling Steel Corp. officials say the tide turned about Labor Day. October orders are about at the year-ago position, but the trend is in the opposite direction. One producer reports that orders from appliance makers in September were 15 to 20 per cent higher than they were in August. He expects October orders to be as good as last month's or a bit better.

An Armco Steel Corp. official says the improvement started in August and has continued to date. The gains are not limited to one or two appliance customers or to only a few white goods lines, he claims. Customers' confidence is evident from the fact that they are ordering farther ahead today than they have for many months.

Whirlpool Corp.

Automatic washers, dryers, and combinations will be among the biggest gainers next year as appliance makers get set to recapture markets lost in the recession



Cost of Steel Industry Fringe Benefits

(Millions of dollars)

	Vacations	Pensions, ins., SUB, Soc. Sec., holidays	Total
1957	$145.1	$367.9	$513.0
1956	129.8	316.1	445.9
1955	111.6	281.5	393.1
1954	98.2	209.8	308.0
1953	106.3	242.9	349.2
1952	96.1	162.1	258.2
1951	79.2	191.4	270.6
1950	65.5	165.7	231.2
1945	39.4	50.4	89.8

Source: American Iron & Steel Institute.

Steel Employment Costs Hit New Peak

Average weekly pay check climbed to $104.56 in 1957's second half. Fringe benefit costs crept upward, hitting 53.2 cents per hour worked last year

STEEL INDUSTRY contracts with the United Steelworkers (signed in 1956) pushed pay rates and fringe benefit costs to record levels during last year's second half. Even though workweeks during the second six months were 1.4 hours shorter than the 37.2-hour average for all of 1957, average earnings in the steel industry were $22 above the figure for all manufacturing.

A booklet published by the American Iron & Steel Institute shows that weekly earnings climbed from $31.23 in 1940 to $104.56 in the second half last year (see chart).

Fringes—Wage supplements continued to increase steadily, hitting 53.2 cents per hour worked in 1957. Costs of supplements in 1956: 43.3 cents per hour worked (see table).

Fringe benefits cost steel companies $513 million during 1957's last half and amounted to 16.1 per cent of the industry's hourly average employment costs in that period, says the AISI.

Costs and Prices—Since 1940, the rise in prices of steel mill products has been much slower than the gain in average hourly employment costs. The AISI reports that prices have gone up only 171 per cent in the last 17 years; employment costs have climbed 265 per cent.

About $680 million was added to the employment costs of iron and steel companies since the USW contract went into effect, the institute says. Employment costs (of steel's hourly workers) averaged over 60 cents an hour more during this year's first half than during the first six months of 1956 (before the new agreement took effect). Of this amount, nearly 47 cents represented added payroll cost, with the rest accounted for in increased costs of pensions, insurance, and unemployment benefits.

The AISI report uses Bureau of Labor Statistics figures to show that steelworkers' wages jumped 75 per cent from 1947 to 1956. Output per manhour increased only 29 per cent during the same nine years.

First half hourly payroll costs (exclusive of some 33 cents per hour estimated average cost of fringe benefits) came to an average $3.087 per hour worked.

Thompson, Affiliate Merge

Thompson Products Inc., Cleveland, has merged with its affiliate, Ramo-Wooldridge Corp., Los Angeles. As of Oct. 31, the combined companies will be known as Thompson Ramo Wooldridge Inc., says J. D. Wright, Thompson's president.

Mr. Wright commented: "The combination of the talents, skills, and experience of the two corporations will make for a more effective, better integrated, and more useful organization in the missile, aircraft, electronic, nuclear, automotive, and general industrial fields—from basic research to the production line.

"We hope that the added facilities will take up some of the slack in our operation caused by the military's de-emphasis of manned aircraft."

AEC Announces Production

The 18 U. S. uranium processing mills produced 5756 tons of uranium concentrates (U-308) during first half, says the Atomic Energy Commission.

A total of 2,471,000 tons of uranium ore was processed to get that amount.

The AEC also announced that uranium enriched to more than 99.97 per cent purity is being offered for sale in the U-238 isotope form. It will be sold from the commission's Oak Ridge National Laboratory in three forms: as U-308 (uranium oxide); cast rods $\frac{1}{8}$ in. in diameter; and foil.

Rails Cut Operating Costs

Railroads are saving nearly $100 million a year in operating costs as a result of research by the Association of American Railroads, says Daniel P. Loomis, president.

Of that amount, he points out, $70 million is being saved each year by track and roadbed studies alone.

Southern Industry Up

The South increased its industrial output by nearly $4 billion and added 1330 new plants last year, says the Southern Association of Science & Industry.

The SASI expects 1957's new plant total to be eclipsed this year.

This girl is building up a scientific background which will qualify her as a secretary for scientists, engineers, and management

Space Age Secretaries

NEED a secretary with a scientific background? Ask for a "tec-sec."

They are products of special two-year courses being established in leading business schools — members of the National Association & Council of Business Schools. The courses (developed by Tests Inc., Washington) have been offered to 50 top business schools, reports Dr. S. M. Vinocour, Tests Inc.'s educational services director.

Status—Twenty schools have accepted the program; another 20 will be in operation soon. Nineteen students are taking a pilot course at the Business Training College, Pittsburgh.

The students (mostly girls) receive a year of mathematics (through calculus), learn a copyrighted system of shorthand developed for engineering and scientific dictation, are taught the special techniques involved in statistical typing, and generally prepare to work for scientists, engineers, and managers.

In Demand—The National Academy of Sciences has requested two graduates as soon as they are available; the National Bureau of Standards has started an in-service program for its secretaries. Graduates in New York City are averaging $82 per week, says Dr. Vinocour, vs. a starting salary of $69 for the average New York secretary.

Qualifications for the course include a high school diploma. Dr. Vinocour says his organization's aptitude testing program limits enrollees to the top 20 per cent because the training is tough. Almost 15 per cent of the first class flunked out.

All graduates take the same final exam (prepared by Tests Inc.), and results are available to prospective employers.

Who Needs Them?—Dr. Vinocour thinks many graduates will easily move up to technical assistant status. Among other talents, they have the ability to do some mathematical problems (which otherwise might take the time of engineers) and minor drafting problems. They also know where to find the answers to technical questions. For example, the American Iron & Steel Institute is providing tec-secs with technical books on steel alloys.

Getting More from Men and Machines

Work sampling helps you do that. It's reliable, relatively inexpensive, extremely convenient, says Wallace J. Richardson, associate professor of industrial engineering at Lehigh

DO YOU KNOW where your labor dollars go? Or how efficiently each of your machines is operating? Can you pinpoint trouble spots?

You'll answer "yes" to all three questions if you have an effective work sampling program, believes Wallace J. Richardson, associate professor of industrial engineering, Lehigh University.

Work sampling is a practical way to measure the activity of employees and equipment. It's use is not limited to production operations. Eastman Kodak Co., for example, uses it to set standards on indirect labor jobs—filling small orders, handling returned goods, stockroom and servicework.

Nor is it limited to big plants. It's cheap and requires no special skills. It pays off. Example: A. E. Staley Mfg. Co., Decatur, Ill., boosted efficiency of maintenance personnel 40 per cent after a work sampling study.

How It Works — Suppose you manage a general machine shop. You want to know how your machinists spend their on-the-job time. (You have to know how much time is wasted—and where—before you can correct it.) Have an observer walk through the shop classifying the activity of the men and machines into predetermined categories. Say he visits each machine ten times a day. (That doesn't mean every 48 minutes; you want a random sample.) Each time he passes a machine, he records what is happening. At the end of, say, 20 days, you might have discovered this:

Activity	% of total time
Operating, cutting metal	43
Make-ready, including layout	16
Tool care and machine adjustment	8
Waiting for instructions	3
Absent from station	18
Handling stock	7
Other	5

"That's a simplified example," says Mr. Richardson. "But it highlights the problems." You see that only 43 per cent of total time is productive. Now you'll want to find out why so much time is spent away from the machines and maybe try to reduce the time spent handling stock and making ready.

The sample tends to be as good as continuous observation. It's based on the law of probability. As in throwing dice, a small number of chance occurrences tends to follow the pattern of a large number. The more observations, the greater the accuracy. But you reach a point of diminishing returns. After, say, 300 observations, you might be 95 per cent accurate. What's to be gained from further observation?

Work sampling, versus continuous observation, has these advantages: 1. Costs 1/3 to 1/6 as much. 2. Provides adequate accuracy. 3. Makes it practical for you to get facts you wouldn't otherwise collect. 4. Causes fewer complaints from operators under study. 5. Doesn't distort employees' routine as much.

What It Does—Mr. Richardson says uses include: 1. Pinpointing problems: If a press crew waits for work 20 per cent of the time and is down for repair 3 per cent, you should worry about scheduling, not maintenance. 2. Establishing goals for supervision: To minimize downtime, a foreman needs a systematic, timely analysis of it. 3. Measuring peak load conditions: Where work is cyclic and precise time standards not economical, sampling can find the variations. 4. Analyzing equipment needs. 5. Planning manpower requirements. 6. Measuring over-all performance. 7. Setting time standards. (Properly done, sampling has wide union acceptance, says Mr. Richardson.) 8. Discovering jobs for work simplification to tackle (see STEEL, Sept. 29, p. 67). A study will show where the possibility of gain is greatest, telling you where to direct your cost-cutting activity.

WALLACE J. RICHARDSON

Who Does It—"At least 5000 firms do work sampling," says Mr. Richardson. "Most steel companies use it now. It's particularly applicable there because of the growing investment per employee." Examples:

Inland Steel Co. uses it as the basis for shop cost reduction programs.

U. S. Steel Corp. studied maintenance personnel. "Scheduling and planning were revised to correct an appreciable amount of waiting time," reports Mr. Richardson.

At Bethlehem Steel Co.'s Sparrows Point plant: Sampling studies showed considerable time and effort were required on a pickler unit to remove cobbles. A new device corrected the situation. Another study showed that trimmer operators spent a lot of time moving from one set of controls to another; dual controls and signal lights were installed.

Lukens Steel Co. uses sampling in its work simplification program.

"That's only a small indication of what's being done," says Mr. Richardson. Work sampling has a lot of undeveloped potential in clerical and service areas.

British Economists Optimistic

Steel industry is somewhat sluggish, but industrialists expect recovery to begin soon. Autos and shipbuilding are working near capacity. Sheet demand is booming

BRITISH economists feel that the recession in the British iron and steel industry has not reached serious proportions even though most mills are working below capacity and some blast furnaces have been closed down.

Industrialists don't expect substantial revival until early next year, depending on what happens in the auto industry and to shipbuilders. Order books are full at shipyards, but officials are wary of cancellations.

The auto industry is less pessimistic. Order books are full, with a large proportion of the work for export. Result: Sheet steel demand is high. British mills are unable to keep up with needs, so automakers are using about 12,000 tons of foreign sheets monthly.

Imports — About 65,000 tons of iron and steel were imported during July, vs. about 90,000 in June. The biggest drop came in pig iron which fell from 40,000 tons to 14,000.

Exports — Total figures for the first seven months show a decline in exports of about 350,000 tons of iron and steel, compared with the same period a year ago.

Iron and steel scrap is being stockpiled in Britain. Merchants are hoping to be able to dispose of it in other sections of Europe. Pig iron output has touched its lowest point since summer of 1955. Only 88 blast furnaces are in operation, vs. 99 a year ago. Pig iron stocks are more than 400,000 tons higher than they were at this point in 1957.

Tin Situation—The Buffer Pool manager of the International Tin Agreement announced that the price of tin in Great Britain would no longer be supported (see STEEL, Sept. 22, p. 43). Prices immediately plummeted to about 80 cents per pound on the open market, a drop of 11.25 cents.

The price of Straits tin in New York dropped almost 9 cents following withdrawal of support by the Buffer Pool.

The tin market has been in trouble largely because of heavy Soviet offerings. Great Britain and Holland have set up heavy limitations on tin trading with the USSR.

Some indications of limited recovery have been seen. Fractional gains on the stock market are being reported. Prices in Singapore dropped less than had been anticipated, giving rise to the feeling that the London decline had been somewhat overdone and that prices will start to climb.

French Output Increases

French industrial productivity (output per manhour) has climbed 31 per cent during the last five years, more than any other European nation, says a report by the German Industrial Institute.

Italian output per manhour rose 29 per cent in the same period, Austrian, 21 per cent; Belgian, 18 per cent; Dutch, 15 per cent; Swedish, 13 per cent; and British, 9 per cent.

Industrial Slowdown—The auto industry shows some signs of weakness. Witness: A few months ago, customers had to wait up to 18 months for delivery of a French-made car. In many cases, immediate delivery can be obtained now.

Coal production in July (the last figures available) still shows the results of the vacation period. It was 5 per cent under June output.

Aluminum Output—France produced about 160,000 tons of aluminum in 1957, topped only by the U. S., Russia, and Canada. Production capacity is expected to increase by some 75,000 tons yearly, making it possible to use all bauxite extracted.

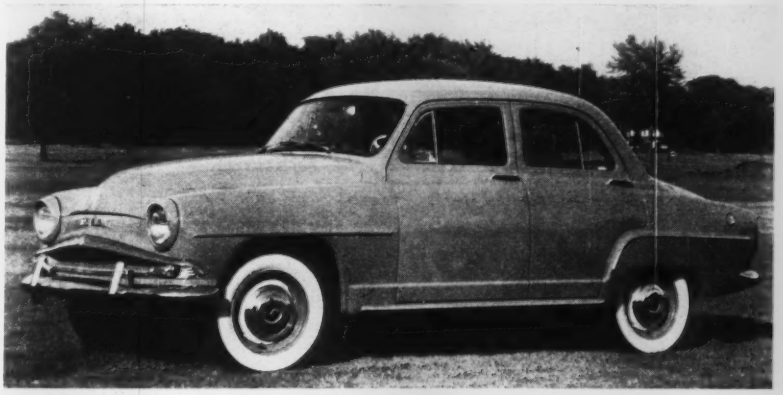
During the first half, French production of primary aluminum reached a record 83,180 tons, compared with 78,290 during the first six months of last year.

Belgian Steel Active

Steel production in Belgium during July hit about 509,000 tons, vs. about 485,000 during the previous month. Total production for the first seven months of 1958 is 7 per cent under what it was during the same period last year.

German Steel Slipping

West Germany's crude steel production in July hit about 1,922,000 tons, against some 2,066,000 in the same month of 1957. In August, output fell to about 1,860,000 tons, vs. 2,121,000 tons a year ago.



THIS ARONDE ELYSEE SEDAN is a sister model to the Aronde De Luxe (one of five Simca models being introduced in the U. S. by Chrysler). The De Luxe differs only in trim. The Elysee and five other models will appear early next year. Aronde sedans and hardtops are 162 in. long (over-all) and 61.3 in. wide. Height is 59.8 in. The 4-cylinder engine has 77.4 cu. in. displacement and 48 hp at 4800 rpm. Compression ratio is 6.8:1. A 57-hp engine and a semi-automatic clutch are optional

Better Statistics Are Needed

THE TREND toward "scientific management" in industry is bringing about a new demand for facts on which managers can build. They tend to look to Washington for many of their economic facts, such as gross national product projections, population forecasts, personal income analyses, and capital equipment spending.

The question arises: Is Washington prepared to give industry better statistics?

James Worthy, vice president, Sears, Roebuck & Co., gave this answer at the Federal Statistics Users' Conference: About $38 million was spent on the federal statistics program (excluding Federal Reserve Board spending) in fiscal 1958. Since World War II, that spending has not been rising as fast as GNP. Mr. Worthy believes there is "a great need for substantial improvement" because Sears, for example, places "primary reliance" on federal economic forecasts, rather than estimates of its own salesmen or purchasing agents.

He sums up: "Every major business decision is an exercise in forecasting."

Clague Tells of New Statistical Areas

Addressing the same group in Washington, Ewan Clague, commissioner of labor statistics, named particularly troublesome statistical areas, but he did not say they would get more attention in the future. The implication was that these are some of the areas he would examine if more money were available from Congress:

1. Causes of inflation. (Commissioner Clague believes productivity statistics on a monthly or quarterly basis would be helpful in determining the effects of business cycles on output and employment. Presently, they are on a calendar year basis and show little relationship to the cycles that come within a year or overlap several years. To properly appraise next year's unemployment problems, for example, BLS needs to know whether a sharp rise in productivity is likely as the economy swings upward.)

2. Wage rate changes. (Shifts in the occupational composition of the labor force and the effects of overtime pay are two factors that don't show up in the bureau's hourly and weekly earnings figures. Also, fringe benefits are not adequately covered.)

3. Price indexes. (The consumer price index lags behind changes in the economy: "It may be in order to develop a more sensitive price index than is now available," reports Mr. Clague—perhaps on a weekly basis and somewhat more comprehensive than the daily spot market index, but without the wide coverage of the regular wholesale price index.)

4. Construction figures. (Housing starts are the best construction figures available. Other construction spending statistics have "serious inadaquacies.")

5. Full employment. (Mr. Clague notes that "marginal" workers (women and youngsters) drift in and out of employment for a variety of reasons, some of which may not necessarily be directly connected with the health of the economy. So employment statistics can be read in a number of ways (as they were on Capitol Hill this last session).

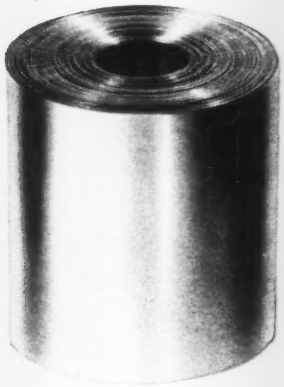
Missile Decisions Coming

As the Defense Department digs into the preparation of the fiscal 1960 budget, you hear a lot of rumors of missile cancellations or cutbacks. At this point, two things appear definite: 1. A choice between the Thor and Jupiter will be made by early November. 2. No decision has been reached on canceling one of our two liquid-fueled ICBMs.

Last week, certain areas of the Pentagon were betting heavily that the Titan ICBM would be canceled in favor of the Atlas. Defense Secretary Neil McElroy denied that, but a good guess of the future of either could be made in the light of what has happened to the Jupiter and Thor. It was rumored for over a year that the Jupiter would lose out to the Thor, but both missiles were put into production. The cost would have been $100 million less if only one had been produced. Now a decision has been made to make a firm choice.

Similarly, the Titan may be produced in limited quantities, only to lose out to the Atlas when it comes to "high" production gates. Other elements in the missile hassle include the possibility of converting the Navy's Polaris to land bases and how fast the Minute Man can be developed. The program is still four to five years away, but a speedup could shorten the lives of the Atlas and the Titan, and either the Jupiter or Thor, depending upon which ICBM gets the go-ahead. Best bet: Most sources say it's the Thor, possibly with a Jupiter nose cone.

You must discount some of the fuss because service rivalries in missiles tend to hit the headlines when budget time approaches. It is not beyond the possibility that cancellations will be minor after Congress lets its will be known. Certainly the Michigan and Alabama delegations will demand something from the Pentagon if the Jupiter is canceled.



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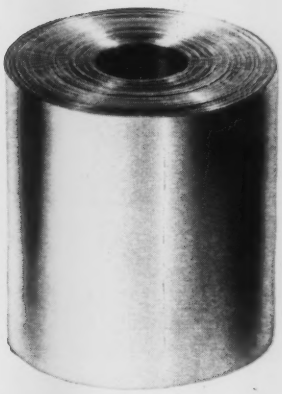

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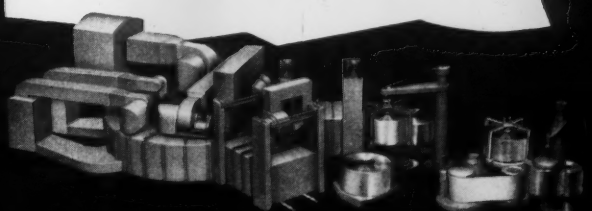

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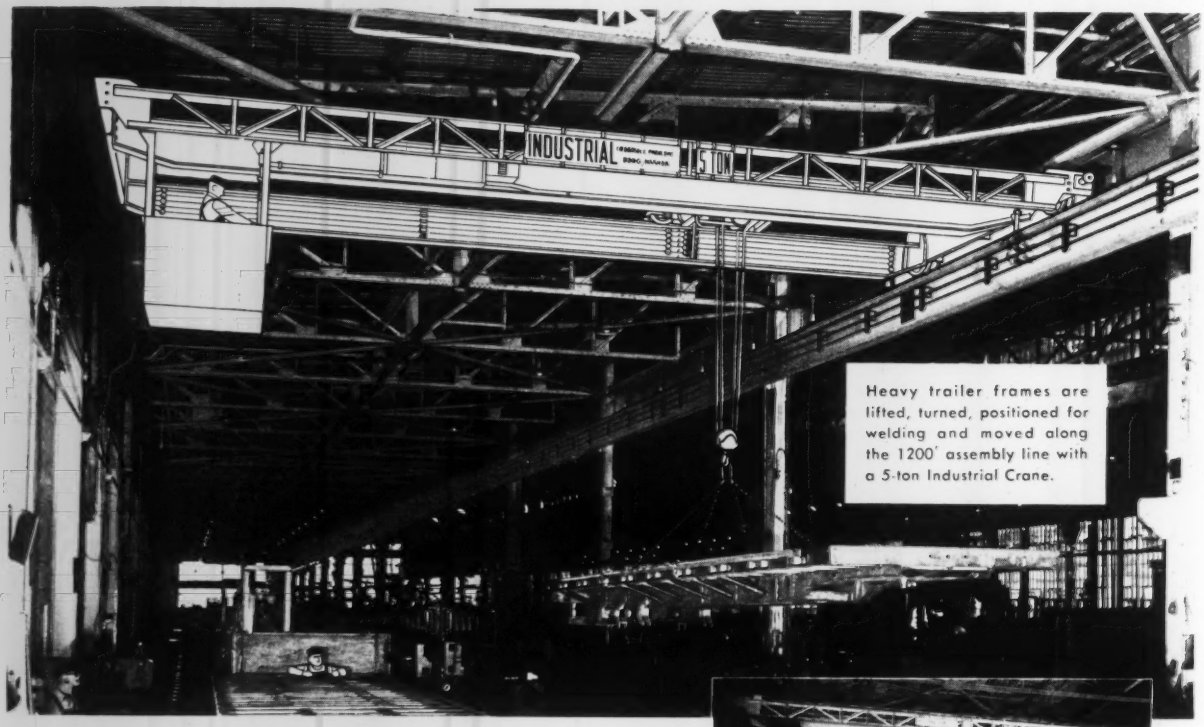


Heavy trailer frames are lifted, turned, positioned for welding and moved along the 1200' assembly line with a 5-ton Industrial Crane.

Another manufacturer of highway trailers chooses Industrial!

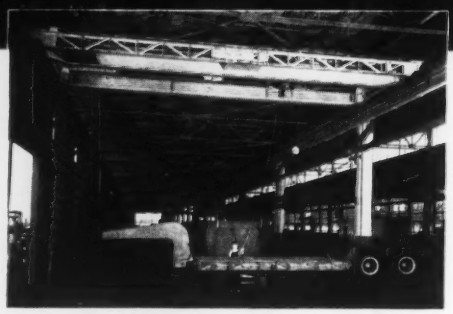
A leading manufacturer of truck trailers uses *seven* 5-ton **INDUSTRIAL** top-running, double-girder, motor-driven cranes in its midwest plant. Two assembly bays, each 1200 feet long are served by one cab-controlled and four floor-controlled **INDUSTRIAL** cranes, moving materials and heavy frames along the assembly lines. Two other floor-controlled **INDUSTRIAL** cranes handle materials in the machine shop.

Constant, regular use in rugged service such as this proves to **INDUSTRIAL** users that *Industrial Cranes are best for the long run.*

- Industrial builds a complete line of cranes for every need. Write for catalogs.

Agents in all principal industrial cities.

Find Your Nearest Dealer In The Yellow Pages



Floor-controlled assembly crane

Two floor-controlled Industrial 5-ton cranes move these heavy duty goose-neck trailers along a 1200-foot assembly line. The frames weighing 7000 lbs. and more are placed with precision and speed.

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Industrial's exclusive control box design makes one-hand control easy.

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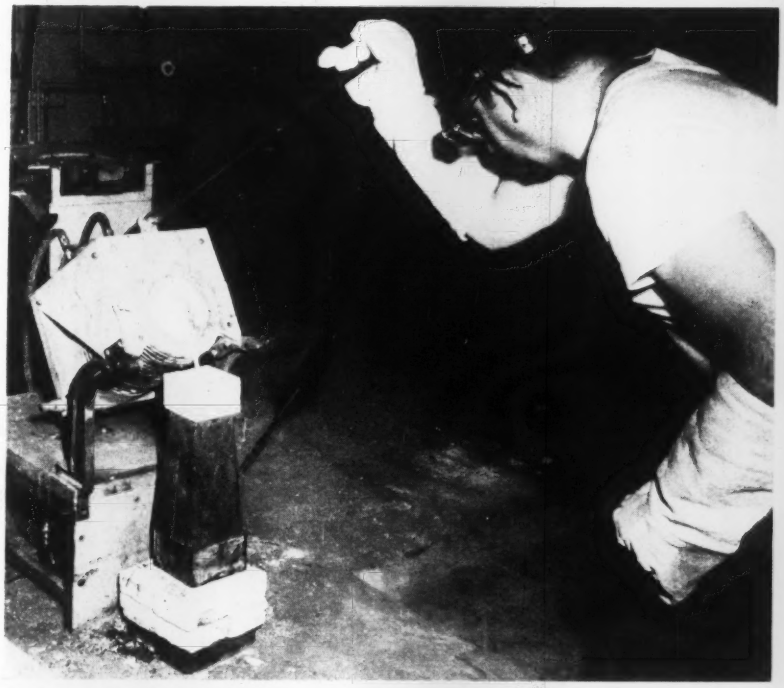


This induction furnace quickly produces melts for experimental tubing and cathodes

Making Development Work

Rigid definition of job responsibilities frees development people from sales and production headaches, but they're still able to gear their work to production realities

DO YOUR PRODUCT development men really develop, or are they glorified sales engineers?

Many middle-sized (500 to 1000 employees) companies start development departments with high hopes, only to see them degenerate into production problem solvers.

Not so with Superior Tube Co., Norristown, Pa. Its secret: Job definition.

"Rigidly defining the role of your development personnel is the key to building a development section that works," says Ardrey M. Bounds, Superior Tube's chief metallurgist.

"Only through a formally organized, rigidly controlled setup can product development have the freedom necessary to concentrate on product development, while gearing its work to production realities," he says.

Does It Work?—The bulk of Superior's business is in alloy tubing, but the company was originally set up to make electronic tube cathodes. Product development is the explanation.

Superior's development section also works on products needed by customers. Example: Zirconium tubing for the Atomic Power Div., Westinghouse Electric Corp.

Organization Insures Freedom—Product research was freed when Superior broke its metallurgical department into four sections in 1946—production, chemistry, electronics, and development. Each has specific duties; production does routine work connected with making various items; chemistry deals with testing and analyzing stock, and electronics does quality control on electronic parts the company produces.

"All areas which might bog down development are thus taken care of," says Mr. Bounds.

Development's job, then, is to study new metals, decide how to produce them, and work out any additional production equipment found necessary.

Production Access Essential—But Superior's setup is not an ivory tower. The whole plant is its lab. "This is necessary," says Mr. Bounds, "to introduce new materials rapidly and effectively." Why? Duplicating production equipment in a lab is impractical; guesswork on the feasibility of economical production is eliminated, and contact helps forestall blind-alley investigations.

Superior's people were ready when missiles, rockets, supersonic aircraft, and nuclear energy made the development of superalloy tubing imperative.

Out of a possible 90 superalloys (those having high strength at high temperatures), the section proved 16 to be economically producible as small tubing.

It has also produced vanadium, columbium, tantalum, and thorium tubing for possible future needs.

Work has recently been completed on metallurgically bonded bimetal wire: bar stock is inserted into the inside diameter of the tubing.

New Products Plus—Machines that produce and test the new alloy tubing are also the responsibility of the development section. It has produced a vacuum annealing furnace for titanium, zirconium, and columbium, a high temperature tensile strength tester, high temperature stress-rupture testing facilities, and tube drawing lubricants.

Superalloy development is still the top investigation area. Now in the works are new grades of stainless steel, titanium and titanium alloys, zirconium and zircaloys, and special nickel cathode alloys.

Ohio Key in Right-To-Work

The fate of the issue there at Nov. 4 elections will determine if it gets on the ballot in other industrial states. California results also will carry considerable weight

FOUR WEEKS from tomorrow the voters of Ohio will determine the fate of the right-to-work movement.

Five other states — California, Colorado, Idaho, Kansas, and Washington—are also voting on the issue this year, but Ohio is crucial because of its heavy industrialization and its geographic position in the heart of America's greatest industrial complex. Of the 18 states that already have right-to-work, Indiana is the only one that's substantially industrialized. Mass indignation over strike violence forced its approval by the state's legislature and governor in March, 1957.

What It Is—Right-to-work bans the union shop. The proposed amendment to Ohio's constitution reads: "No employer or labor organization shall deny or abridge the right to work by requiring membership or nonmembership in, or payment or nonpayment of money to, a labor organization as a condition of employment or continued employment in this state."

A federal act banning the union shop is highly unlikely in the foreseeable future, so the issue is up to the states, as specifically declared in the Taft-Hartley Act of 1947. A Supreme Court decision of 1949 validates all state laws.

For and Against—Organized labor realizes the importance of Ohio and is pouring money and publicity into the state to defeat the amendment on Nov. 4. It has many arguments, but the main one is: Without a union shop, nonunion people can get a free ride, benefiting from improvements won by the union without having to pay dues. The major argument advanced by proponents of right-to-work: An employee should have a free choice about joining a union without affecting his getting or holding a job. He's a free man, and he can't be forced.

The lineup of forces pro and con is surprising. Big Labor is against. But a group called the Ohio Labor Committee for Right-To-Work, an insurgent organization of union members in Toledo, is campaigning for it. It's headed by S. D. Cadwallader, a Baltimore & Ohio Railroad employee. The core of the backing for the issue, organized as Ohioans for Right To Work Inc., are small businessmen. Influential supporters include Smaller Business of America Inc. and the Ohio

Chamber of Commerce. The Republican Party has cautiously skirted the issue, claiming it's "not a political matter." Even the Republican governor, C. William O'Neill, has endorsed it "personally only." Not many larger corporations in Ohio have gone on record advocating it.

Politics — Republicans wanted right-to-workers to delay putting the issue on the ballot until 1959. Their argument: Unions will bring out a big vote. While the members may cast in favor of the issue in the privacy of the booth, they would vote Democratic on candidates.

Ohio Republicans also remember Sen. William Knowland's setback last spring in the California gubernatorial primaries. Their party member had made right-to-work as his key campaign plank.

Business—Big companies in Ohio have not joined the bandwagon in conspicuous numbers for several reasons. One is a state law (1908) which prohibits the use of corporate money or facilities for political issues. Despite the Republicans' claim that the matter is not political, corporation lawyers think otherwise. A test case against Cleveland-Cliffs Iron Co. seemed to prove their point when the Circuit Court of Appeals ruled on July 29, 1958, that the Cleveland firm had violated the law by contributing to the support of some county issues. The case is being appealed to the Ohio Supreme Court, but it won't be decided until after Nov. 4.

Some Ohio industrialists honestly believe that the union shop is not bad. "With the union shop, we can pin any walkouts on the union since it has complete responsibility. We may not be able to do that without a union shop," say some. "It contributes to labor stability."

Finances — So, right-to-workers have had a lean time financially, and their propaganda has been far smaller in volume than the unions'. Ohioans for Right-To-Work Inc. says it will concentrate most of its efforts in the few weeks before the election. Big Labor has been beating the drums since early September.

If passed, the new law will go into effect in Ohio in November, 1960, for those companies which have union shop provisions already in their contracts and will become effective at once for those firms now without the union shop.

Simmer—Right-to-work has been an issue since the 1940s in Ohio but has never gained any ground. Every General Assembly session in the last decade has had a right-to-work bill of some kind. One was passed but vetoed by the governor.

Will it at last become law in the state by constitutional amendment? The fervor of the unions' campaign against it indicates their alarm. Advocates claim the overwhelming support of nonunion people. They also claim that several public opinion pollsters have found that 52 per cent of union members favor right-to-work, only 40 per cent are against it, and 8 per cent are undecided.

If Ohio O.K.'s it, look for similar campaigns in many other industrial states.

Bid in Du Pont-GM Case

The Justice Department is asking for an immediate injunction to curb any Du Pont influence over General Motors Corp. while the court decides whether the chemical company must get rid of its 63 million shares of GM stock.

A new brief filed in Chicago federal district court urges Judge Walter La Buy to promptly prohibit Du Pont from: 1. Voting its GM stock. 2. Increasing the percentage of GM stock it holds. 3. Permitting its officers to attend GM meetings.

Government lawyers expect a ruling on the new motion before a date is set for a hearing on the case's key issue of divestiture. That hearing may come before yearend, some government attorneys believe.

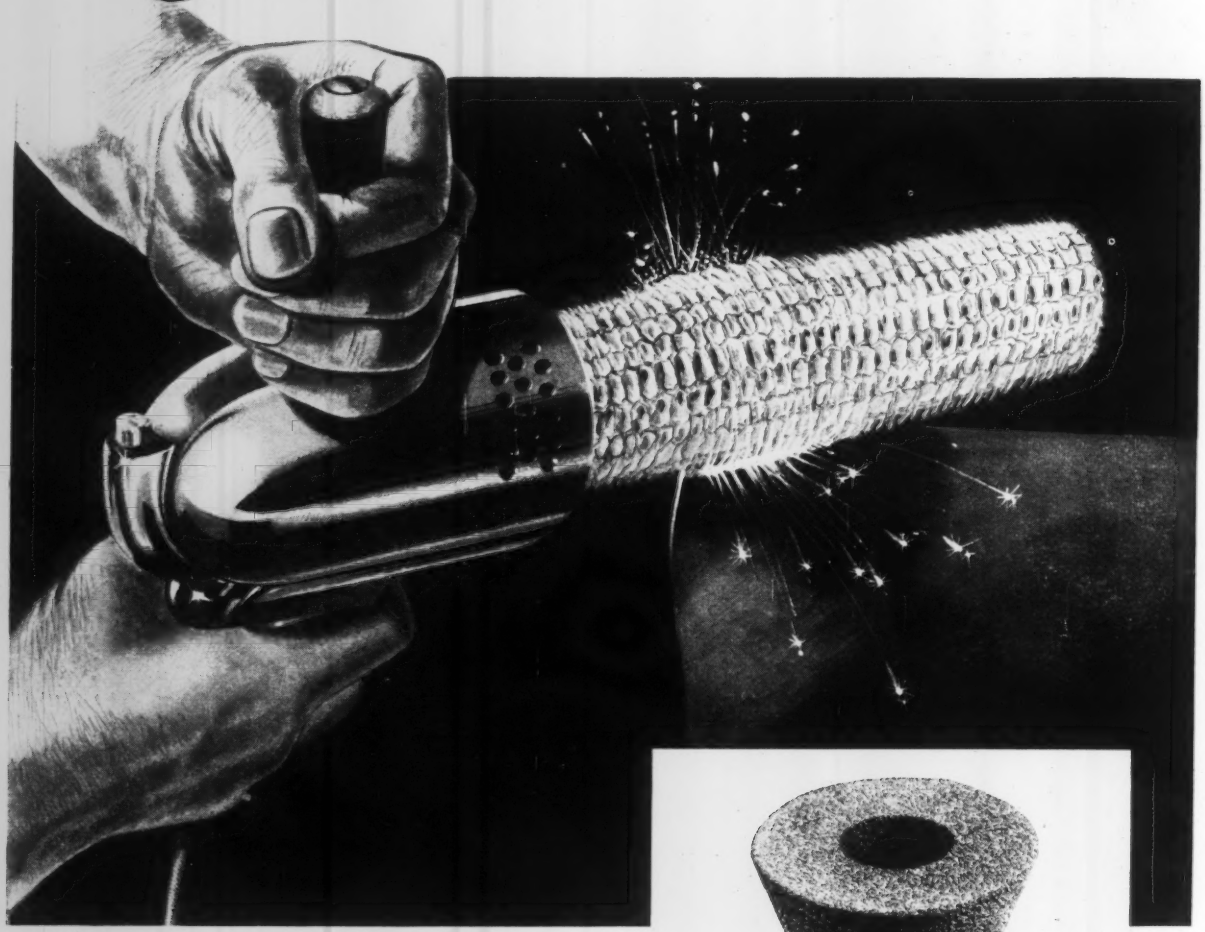
Navy in Rainmaker Role

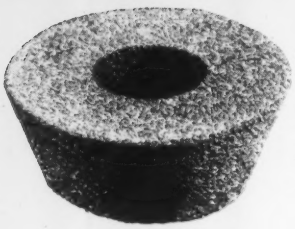
The U. S. Navy has moved a step closer to becoming "the rainmaker." Navy scientists have created and destroyed clouds by seeding them with carbon black. Recent experiments (over Georgia's south coast) are viewed as a step toward preventing tornadoes and hail storms, reducing or boosting rainfall, and clearing fog.

But the men who directed the experiment cautioned that much research remains to be done. They have not determined whether the clouds they created can produce rain. However, they said studies indicate carbon may be used to clear up clouds. The scientists said the experiments may have industrial and military applications.

THIS COAL LOADING DOCK at Toledo, Ohio, will speed 6000 tons of coal an hour from railroad cars to ships. The new, $7-million shiploader built for the Chesapeake & Ohio Railway will dump two cars simultaneously. C&O engineers designed it to handle the largest ships that will use the St. Lawrence Seaway

US RUBBER GRINDING WHEELS





Inset shows actual U. S. Lo-Temp Cup Wheel.

Grinding with a corn cob?

It's a fact! In the new U. S. Lo-Temp Cup Wheel, ground-up corn cobs are blended into the batch with some remarkable results:

Greater wheel porosity, thereby preventing the wheel from burning the metal, even at top speeds • greater uniformity within the wheel — and from one wheel to another • greater strength and resistance to wear, therefore, longer life and wheel economy • greater resistance to centrifugal stress.

As any grinding wheel operator will quickly discover, this amazing new "corn-fed" U. S. Lo-Temp Cup Wheel permits him to do a more craftsmanlike job more quickly, more surely, more safely.

The U. S. Lo-Temp is just one of several new grinding wheel developments coming from U. S. Rubber. Get in touch with wheel specialists through U. S. Rubber, 312 N. Hill St., Mishawaka, Indiana, your local "U. S." District office, or by writing us at address below.

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Catalina Vista

Specifications

Factory Price	$2586
Wheelbase	122 in.
Length	213 in.
Height	56.4 in.
V-8 Engine Displacement	389 cu in.
Comp. Ratio	8.6:1
Horsepower	245/4200
Torque	392/2000

Imperial

Specifications

Wheelbase	129 in.
Length	226 in.
Height	56.9 in.
Width	81.0 in.
V-8 Engine Displacement	413 cu in.
Comp. Ratio	10.1:1
Horsepower	350/4600
Axle Ratio	2.93:1

Pontiac, Imperial Make '59 Debuts

GM's division upgrades series as medium price cars face decisive year. Chrysler revises basic style of luxury job in move for sales comeback

PONTIAC has upgraded its series lineup to avoid being pushed by the luxury Fords, Chevrolets, and Plymouths, and to enable it to compete more directly in the medium price field. A Catalina series replaces Chieftain and Super Chief cars. The top series (Bonneville) has been extended to a full line by the addition of a four-door hardtop and a station wagon.

As a result, Pontiac's lowest price 1959 car is $55 higher than its cheapest 1958 offering. The price spread between top and bottom cars is $835, some $107 less than 1958 spread.

Won't Pitch Low—General Motors' merchandisers say Pontiac will place its 1959 sales emphasis on the prestige of medium price car ownership instead of suggesting that some of its models are cheaper than the low-priced Big Three. The industry suspects that 1959 may be the year in which makers of medium price cars will find out whether they can regain a traditional 35 to 40 per cent of the market. (They're around 28 per cent now.)

Prestige is also important because buyers who might be considering the lowest priced Catalina sports sedan ($2390) can get a fancy Chevrolet Impala convertible for only $176 more. This last year, the Impala has been $258 higher than the cheapest Pontiac.

Will Style Help?—To gain prestige, Pontiac is offering the split fin look in rear quarter panel styling. Grilles are a departure from previous styling theory. They're separated to give a wider and lower looking front end.

Like other GM divisions, Pontiac has increased wheel tread nearly 5 in. to give greater riding stability. Glass area is increased 37 per cent, and bodies are 3.3 in. wider. Two and four door hardtops in the Catalina and Star Chief series are 56.4 in. high and the Bonneville four-door hardtop is 54.6 in. high compared with the 55.6-in. '58 model. Other series were 57 in. high in 1958.

Over-all lengths are different, with the Bonneville growing from 211 to 220.7 in. The Star Chief

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also is 220.7 in. long, up from 215.5 in. All station wagons are 214.3 in. long. Wheelbases still are 122 and 124 in., but the Bonneville now uses the longer wheelbase.

Engines—Standard V-8 engines aren't changed much, although horsepower is up from 240 to 245 in the two lower series. The Bonneville now has 260 hp instead of 255. Compression ratios still remain at 8.6:1, but the block has been bored out to 389 cu in. (It was 370 cu in.) Bulkheads have been strengthened to permit this change.

The 10:1 compression ratio engines are continued as optional equipment. Horsepower has been boosted to 315. Fuel injection is not offered, but Pontiac does have an economy engine built on the 389 cu-in. block. It has a special, two-barrel carburetor, intake manifold, and camshaft. With a 2.87:1 axle ratio, it's rated at 215 hp.

Wagons—Station wagons will be offered in the Catalina and Bonneville series. Pontiac will be pushing the three-seated Catalina Safari wagon ($2925). It has a rear facing third seat and an electrically operated rear window.

Other improvements on all series include GM's redesigned brake drum with wider cooling flange, front coil springs with a lower spring rate, and electric windshield washers.

Imperial Improvements

Following corporate patterns, Chrysler's Imperial has "improvements—not changes" in 1959 cars which will be shown by dealers on Oct. 24. The nine models and three series are unchanged in basic silhouette.

The 1959 jobs are about the same size as '57 and '58 models, but grille and bumpers are new, and headlights have been lowered. A redesigned frame (with heavier gage steel in some members) offers a lower floor which slightly increases front and rear legroom.

Engine—Imperial's 392 cu in. powerplant has been increased to 413 cu in. piston displacement. Compression ratio is 10.1:1, vs. 10:1 before. Bore and stroke are revised slightly (from 4.00 x 3.90 in. to 4.18 x 3.75 in.). Result: Brake horsepower is up from 345 to 350 (at 4600 rpm), and economy should be better. The engine is 100 lb lighter than its 1958 predecessor.

Air Springs—For the first time, Chrysler offers air suspension, but it's on the rear only and is referred to primarily as a load leveling device. Pushbutton controls are extended to the heater-air conditioning units. Swivel seats are optional, as are two types of stainless steel roofs for hardtop styles. Imperial will offer 21 color choices in Chrysler's new superenamel that isn't supposed to need polishing for three years.

C. E. Briggs, vice president and general manager of Chrysler and Imperial Div., says the company will push its Auto-Pilot device and expects to install it on 35 per cent of 1959 Imperial production.

Better Quality?—This is the first year Imperial will have its own assembly facilities. The feeling is that the move should improve quality. Mr. Briggs says there are 32 quality control inspection stations in the 1 million sq ft plant. Imperial will use a master body checking fixture which cradles the whole body shell and checks 150 dimensions at once.

Those improvements, plus a more optimistic market forecast, are expected to help Imperial recover from 1958. (Calendar year registrations are more than 50 per cent below 1957's.) Final sale figures aren't available, but in the first eight months 8447 Imperials were built, compared with 30,172 in the same period last year.

U. S. Auto Output

Passenger Only

	1958	1957
January	489,357	642,690
February	392,112	571,098
March	357,049	578,826
April	316,503	549,239
May	349,474	531,365
June	337,355	500,271
July	321,053	495,628
August	180,313	524,354
September	140,000†	284,265
9 Mo. Total	2,883,216†	4,677,136
October		327,362
November		578,601
December		534,714
Total		6,117,814

Week Ended	1958	1957
Aug. 30	16,771	118,553
Sept. 6	12,016	90,704
Sept. 13	24,072	85,816
Sept. 20	37,150	52,365
Sept. 27	46,303†	51,552
Oct. 4	45,000*	21,975

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Cole's Other Comments

In addition to making the highest auto sales forecast to date (5.9 million), Edward N. Cole, Chevrolet's general manager, had some other statements that are of particular interest to metalworkers.

Exterior Trim — "On hardware, we've gone almost entirely to anodized aluminum to avoid salt pitting of zinc diecast parts," says Mr. Cole. He adds that the 1959 Chevrolet will use 4 lb more aluminum than do the 1958 models which carry an estimated 57 lb.

More Glass; Less Steel — Says Mr. Cole: "The amount of steel that's been replaced by glass is slight. Maybe our roof panel is a little shorter, but the quarter panels are longer, so the amount of steel used is about the same."

The Chevrolet chief also points out: "We've tried to simplify the sheet metal from the standpoint of easier maintenance and to reduce replacement cost involved in minor accidents."

Air Suspension — The division planned for around 10 per cent of 1958 output but achieved only 1.9 per cent. "But our difficulties are now behind us. We can make the ride frequencies of our new air suspension system much lower than we did in 1958," Mr. Cole asserts.

Fuel Injection — "We are not eliminating fuel injection. We are going to carry it just about as bullishly as we have in the past because we think it is the right way to do this thing. We are not saying our system is the ultimate, but unless you can keep working on developments of this type, they are likely to be lost," asserts Mr. Cole.

Exhaust Notes

• Passenger car sales are expected to run normally at about 6 million units annually in the next decade, possibly hitting peaks of 8 million a year in the mid-1960s, predicts Harry A. Williams, managing director, Automobile Manufacturers Association.

New Douglas DC-8 draws strength from world's tallest bottom-entry furnace

Douglas engineers were intent on building great strength and flex into the DC-8 Jetliner's giant wings and fuselage to resist the buffeting of the most powerful air torrents. So Douglas called on Despatch to design and build the world's tallest, vertical bottom-entry furnace, with elevator system. Let's watch it at work:

Two great doors slide open and a mammoth elevator eases the heavy load of aluminum and steel wing or fuselage sections up into the heat chamber. The temperature sprints to 930° in just 15 minutes. The doors swing open and with a roar the vital parts are doused in the quenching tank. Seconds later, the elevator "surfaces" and returns the toughened sections of the DC-8 to the loading floor.

Only one man runs the giant Despatch furnace. One man pushes the buttons that radiate new strength and flexibility into the nation's most modern airliner.

For full facts on the capabilities of all Despatch heat treating and finishing products and systems, write or call . . .

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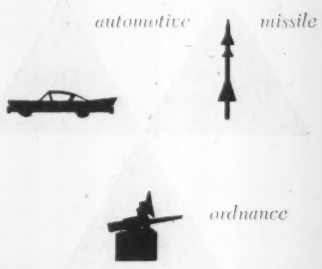
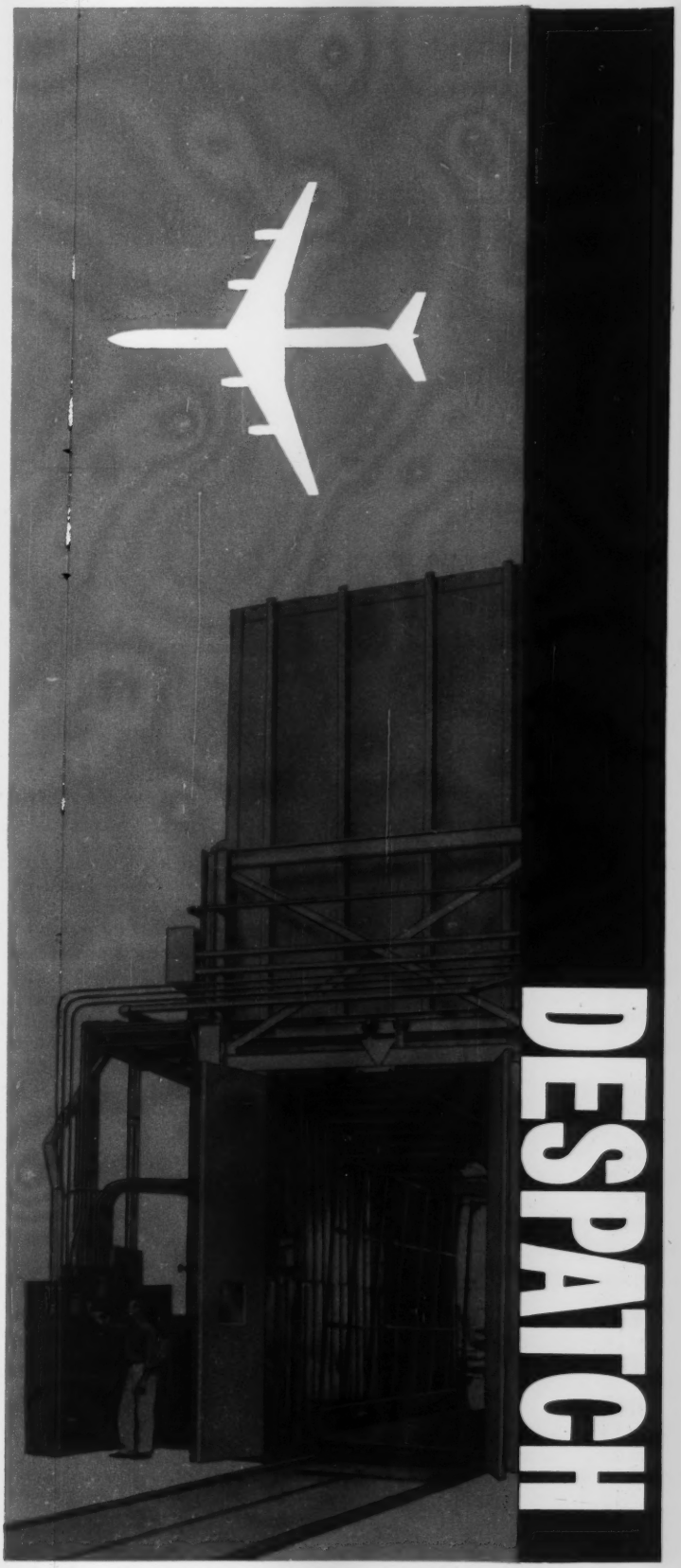
619 S. E. 8th St., Minneapolis, Minn., Dept. 12A

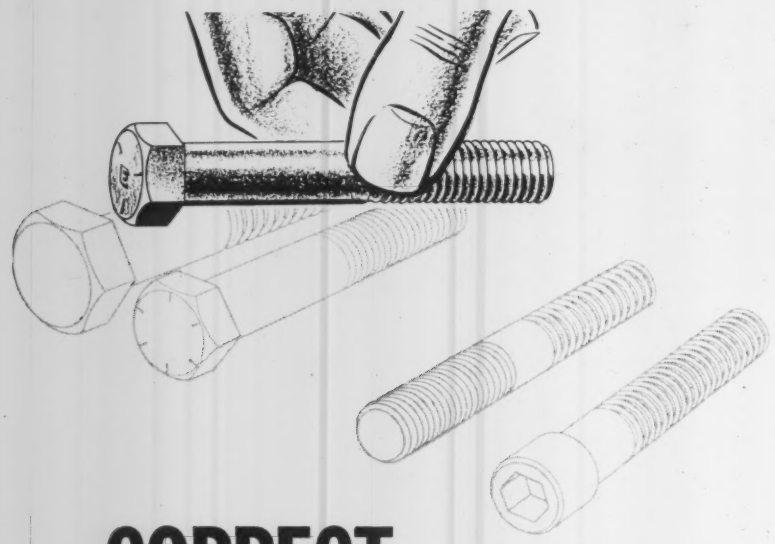
Despatch builds for many industries



DESPATCH OVEN CO.



ECONOMIC FACTS ON FASTENERS



CORRECT FASTENER SELECTION AVOIDS COST PENALTY

- **A fastener survey can reveal many opportunities for savings**
- **Cut costs without cutting strength or safety of connection**

It's a mistake to pay premium prices for fastener properties you neither need nor use. While costly alloys have their place, most times the three grades of steel used in standard bolts and nuts can do the job and save money.

Example: Specification calls for alloy bolts with strength of 145,000 psi. But in assembly, they're tightened to just 30,000 psi. This gives no more strength to the joint than a *far more economical* Bright Cap Screw tightened to same load. The change would save a substantial sum.

Reducing size also saves. Remember that a fastener's job is to hold an assembly together. *Holding power* is what you should buy, rather than size or number of pieces.

Example: Product requires fasteners with a safe load capacity of 20,000 pounds. Bright cap screws of $\frac{3}{4}$ inch size will do it; but so will $\frac{5}{8}$ inch High Tensile Bolts—*at less cost.* Actually, to get the same holding power as in $1.00 worth of the high tensile fasteners, you would need $1.50 worth of bright cap screws.

All this just touches on a valuable story for any manufacturer using standard fasteners. Worth a call to hear what it holds for *you?* Contact Russell, Burdsall & Ward Bolt and Nut Company.

R B & W
114th year

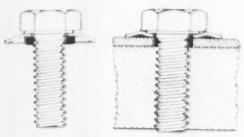
Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

SPIN-SEAL* screws give leakproof fastening

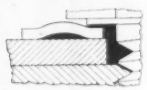
for flat or curved sheet materials

Here is a new type of composite fastener that seals by means of a unique flow-in sealant and washer.†

Concave in shape, the heat treated springy washer confines and controls the flow of sealing compound. Tightening the screw forces sealant into various spaces around (1) threads, (2) head, and (3) clearance hole to give hermetic sealing.



When screw is tightened the compound seals clearance hole and top thread; between washer and surface; between head and washer.



The washer has ability to conform to curved surfaces and still seal securely against hydrostatic pressures and wind driven water.

ONLY THE SCREW TURNS

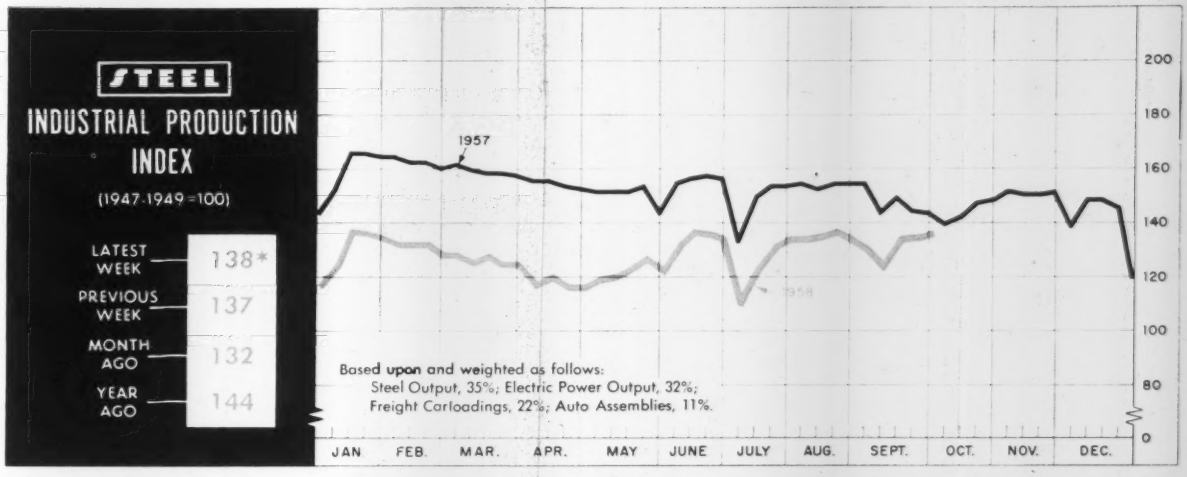
Washer does not turn with the screw. This prevents twisting or tearing the sealing "gasket", marring of polished surfaces, or gouging of painted finishes.

The flow-in gasketing compound is plastic rather than elastic. Stable and non aging, it won't split or ozone-check under pressure. It gives controlled flow into clearance spaces. Compounds are available to seal out water or oil.

Send for Bulletin SS-1A. *T.M.

† U.S. & Can. Pats. Pend.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY



*Week ended Sept. 27.

Economy Headed for Record Level in 1959

THE nation's economy will reach a record level next year, a group of businessmen forecast at a special meeting of the Cleveland chapter of the American Marketing Association. But they point out: Prosperity will not return with equal strength to all businesses, and they salt their prognostications with more than a dash of "ifs."

The last week of September, the panelists agree, is too early to give a definitive forecast for all of the next year. But they are unanimous in the opinion that signs of a recovery from the 1957-58 recession are broad enough to lead to sustained uptrends throughout 1959.

First Stage—Leonard H. Lempert, director of Statistical Indicators, Great Barrington, Mass., asserts that the nation is in the first stage of a cyclical recovery period. All eight indicators which lead general business are above the late 1957, early 1958 levels, and all the coincident indicators are at or near year-ago levels. A few of the lagging barometers are beginning to turn, which means that the general upturn has been underway for three or four months.

Mr. Lempert does not believe that the recovery of the Federal Reserve Board's industrial production index will continue through the fourth quarter at the current 3-point-a-month pace. But he feels that it will reach a peak of 146 (1947-49 100) by mid-1959. He also predicts a $465-billion level for the gross national product next year, which would be a record.

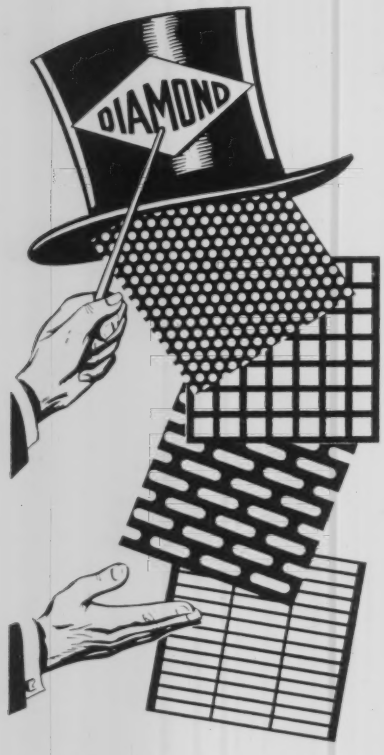
Not So for Tools—T. L. Strimple, president of National Acme Co., Cleveland, declares that the machine tool industry is noticing a pickup in activity, but it will fall far short of peak levels.

Shipments in 1958 will approximate $400 million, which he claims is a normal year compared with any but the emergency-prodded record years. Next year may see shipments of between $500 million and $600 million for cutting type tools.

BAROMETERS OF BUSINESS

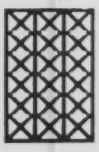
	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,850[1]	1,816	2,115
Electric Power Distributed (million kw-hr)	12,200[1]	12,240	11,697
Bituminous Coal Output (1000 tons)	8,435[1]	8,345	10,065
Crude Oil Production (daily avg—1000 bbl)	7,050[1]	7,087	6,821
Construction Volume (*ENR*—millions)	$370.7	$332.4	$342.3
Auto, Truck Output, U. S., Canada (*Ward's*)	65,045[1]	54,547	62,167
TRADE			
Freight Carloadings (1000 cars)	665[1]	667	739
Business Failures (Dun & Bradstreet)	262	256	287
Currency in Circulation (millions)[3]	$31,285	$31,393	$31,052
Dept. Store Sales (changes from year ago)[3]	+1%	+4%	−4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$23,531	$23,795	$23,007
Federal Gross Debt (billions)	$276.8	$276.8	$271.9
Bond Volume, NYSE (millions)	$31.5	$32.3	$23.3
Stocks Sales, NYSE (thousands of shares)	18,481	18,111	12,640
Loans and Investments (billions)[4]	$94.1	$94.7	$87.1
U. S. Govt. Obligations Held (billions)[4]	$31.9	$32.7	$24.7
PRICES			
STEEL's Finished Steel Price Index[5]	246.65	246.65	239.15
STEEL's Nonferrous Metal Price Index[6]	199.0	197.9	209.7
All Commodities[7]	118.9	119.0	117.7
Commodities Other than Farm & Foods[7]	126.0	126.0	125.7

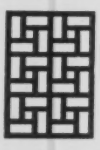
*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1936-39=100. [7]Bureau of Labor Statistics Index. 1947-49=100.

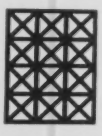


Top-Hat Quality IN Perforated Metal

The popular Diamond Perforated-metal patterns shown above are only a few of the many illustrated and described in our 32-page Catalog No. 39. All of these standard patterns are available in a wide range of unit-opening sizes and we are always equally pleased to quote on original designs of any type or size.

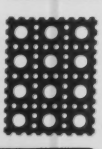






Catalog 39 also illustrates and describes our high-quality lines of *Ornamental Cane*, Perforated-Metal Sheets for Accoustical installations and Heavy-Duty Architectural Grilles. Write, today, for a free copy.

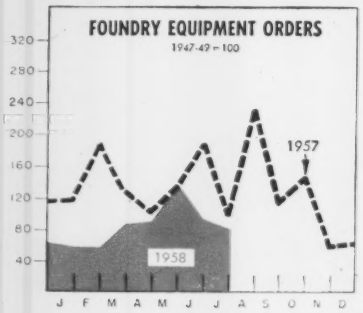
Correspondence is especially invited regarding ANY requirement for perforated-metal panels or parts. We are equipped to fabricate special sections to any desired extent and welcome opportunities to make money-saving suggestions.

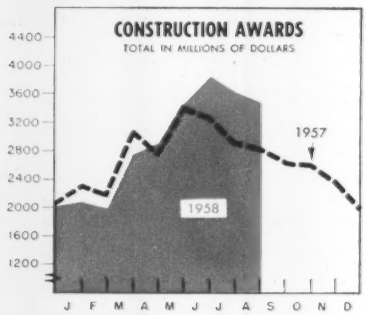


DIAMOND MFG. CO.
WYOMING WILKES-BARRE AREA **PA.**

Manufacturers of DIAMONTEX, the Perforated Metal Lay-In panel for better Acoustical Ceilings. New Bulletin No. 47, gives complete information. Write, today, for free copy.

THE BUSINESS TREND





	1958	1957	1956
Jan.	57.9	117.9	195.6
Feb.	57.6	188.4	169.0
Mar.	85.9	127.0	152.7
Apr.	88.7	101.1	135.2
May	136.1	136.2	207.0
June	87.7	187.5	156.7
July	77.9	98.6	110.3
Aug.	....	231.3	188.3
Sept.	....	113.9	114.7
Oct.	....	145.3	122.2
Nov.	....	59.6	121.0
Dec.	....	61.4	115.6
Avg	....	130.7	149.0

Foundry Equipment Mfrs. Assn.
Charts copyright, 1958, STEEL.

	Total		Building	
	1958	1957	1958	1957
Jan.	2,066.1	2,299.6	1,536.2	1,730.7
Feb.	1,953.4	2,161.0	1,478.1	1,695.5
Mar.	2,721.2	3,078.0	2,037.7	2,199.7
Apr.	2,881.0	2,776.4	2,198.0	2,069.7
May	3,402.6	3,399.5	2,470.3	2,416.8
June	3,819.6	3,243.5	2,340.3	2,341.5
July	3,607.1	2,900.7	2,633.5	2,247.6
Aug.	3,466.6	2,818.0	2,529.5	2,291.8
Sept.	.....	2,624.9	.....	2,092.2
Oct.	.....	2,613.8	.....	2,075.6
Nov.	.....	2,370.7	.....	1,808.5
Dec.	.....	1,982.3	.....	1,457.5
Totals	.....	32,268.4	.....	24,427.1

F. W. Dodge Corp.

he estimates. But to achieve that level, order activity will have to show more strength than it has so far in 1958. (Through August, net new orders totaled only $179.3 million.)

Appliances Head Up—After two years of slow sales, the appliance industry is getting set for advances right across the board, says C. A. Brewer, manager, trade association relations for the Appliance & Television Div. of General Electric Co., Louisville. Next year, total unit sales of 11 types of electrical appliances (including TV sets) will rise 8.8 per cent over the 1958 total.

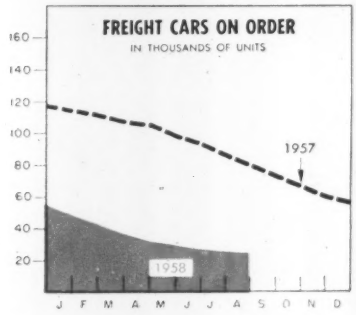
The increases will range from 2.8 per cent for freezers to 35.7 per cent for washer-dryers. Purchases delayed by the recession will help boost the industry's position, he feels, despite increasing consumer interest in such things as power boats, power mowers, camping equipment, and do-it-yourself tools.

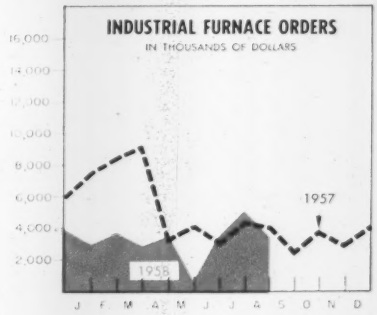
Boost from Autos—The auto industry is anticipating considerable improvement in 1959. New car sales of 5.6 million (including 400,000 imports) are a possibility, says R. J. Eggert, marketing research manager, Ford Motor Co., Detroit.

He gives seven reasons: 1. Disposable personal income in 1959 is expected to be $325 billion, $19 billion above the first-half rate this year. 2. New styling for most '59 models will whet consumers' appetites. 3. A higher than normal portion of 1955-57 model owners held off buying this year. 4. Higher trade-in values will offset higher new car prices and reduce the cost of trading. 5. An increase in the number of four to nine year old cars will stimulate demand for new models. 6. Liquid assets of consumers are at an all-time high. 7. Higher sales will increase advertising and sales promotion expenditures.

Robert L. Walsh, assistant director of commercial research for Chrysler Corp., Detroit, agrees with Mr. Eggert's prediction, but feels that a higher figure is possible. (Officials of Chevrolet Div. of General Motors Corp., Detroit, are predicting 5.9 million cars for 1959, including 400,000 imports.)

Result: More Steel — William Carlin, economist for Republic Steel Corp., Cleveland, concludes that the upturn in those and other hard-goods industries will push 1959's steel output about 20 or 30 per cent over the 1958 mark. That will probably be between 100 million and 110 million tons of steel, or about 75 per cent of 1959's capacity.





	Awards		Backlogs (end of month)	
	1958	1957	1958	1957
Jan.	401	5,328	48,787	114,656
Feb.	294	6,065	43,750	111,965
Mar.	239	5,359	38,027	107,708
Apr.	278	6,429	32,908	105,190
May	1,372	3,423	30,386	97,006
June	317	4,918	27,757	91,810
July	376	1,251	25,994	85,229
Aug.	1,773	3,203	25,611	79,258
Sept.	....	3,257	.....	71,981
Oct.	....	2,206	.....	65,718
Nov.	....	1,070	.....	59,194
Dec.	....	3,492	.....	55,941
Total	....	42,051		

American Railway Car Institute.

	1958	1957	1956
Jan.	3,045	7,380	10,244
Feb.	3,684	8,373	12,163
Mar.	2,871	9,090	7,025
Apr.	3,572	3,164	8,803
May	953	3,994	3,667
June	3,672	2,974	4,748
July	5,169	4,332	4,140
Aug.	3,533	3,924	6,722
Sept.	....	2,337	3,057
Oct.	....	3,621	8,741
Nov.	....	2,832	3,986
Dec.	....	3,992	5,858

*Not including new orders for steel mill furnaces.
Industrial Heating Equipment Assn. Inc.

Although he admits there are some disturbing factors which could upset his predictions before the next 15 months are over, here is the way Mr. Carlin sees the 1959 picture for several steel consuming industries:

Autos—Sales of 5.7 million units and production of 5.5 million. Production of 1 million trucks. Steel shipments to the industry to be about 13.6 million tons, vs. 9.2 million this year.

Appliances — Improvement close to 9 per cent. (See story, Page 41.)

Construction—Work put in place to total about $50 billion. Housing starts to fall just short of 1.2 million units. Nonresidential building, except utilities, to be up slightly.

Nonelectrical Machinery — Up mildly.

Heavy Electrical Generating Equipment—Not as strong as in the immediate past, but still good.

Oil Wells — Drillings up from about 48,000 this year to better than 50,000 in 1959. Reduction of huge inventories in 1957-58 means more steel shipments to this industry in 1959 than drillings might indicate.

Freight Cars — Downtrend in backlogs to continue at about present rate. (See chart above.)

Farm Machinery—Production to decline, but steel shipments to industry will hold up well because of inventory situation.

Metal Cans—The usual 3 to 4 per cent annual gain despite inroads of aluminum and plastic packages.

Trends Fore and Aft

- The gap between corresponding 1957-58 weekly freight carloadings has been narrowing for several weeks and will continue to do so, reports the Association of American Railroads. During the fourth quarter, the lag will be only 6.2 per cent, compared with deficits of 20 per cent earlier this year.
- The new order index of the American Supply & Machinery Manufacturers' Association advanced 2 points in August to 172 (July, 1948 = 100).
- Sales of gears advanced 21.6 per cent in August, sending the American Gear Manufacturers Association's index to 162.1 (1947-49 = 100).
- Foundry activity is far from healthy, as reflected in the 77.9 reading of the Foundry Equipment Manufacturers Association's order index (1947-49 = 100). (See chart, Page 58.)

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STAINLESS STEEL
THIN STRIP

.010 to .001 25" wide; down to .00015 in narrower widths.

All regular commercial tempers.

Commercial bright anneal finish.

Unique annealing facilities provide uniform temper and uncontaminated surface.

Coils or cut lengths, both with #3 edge.

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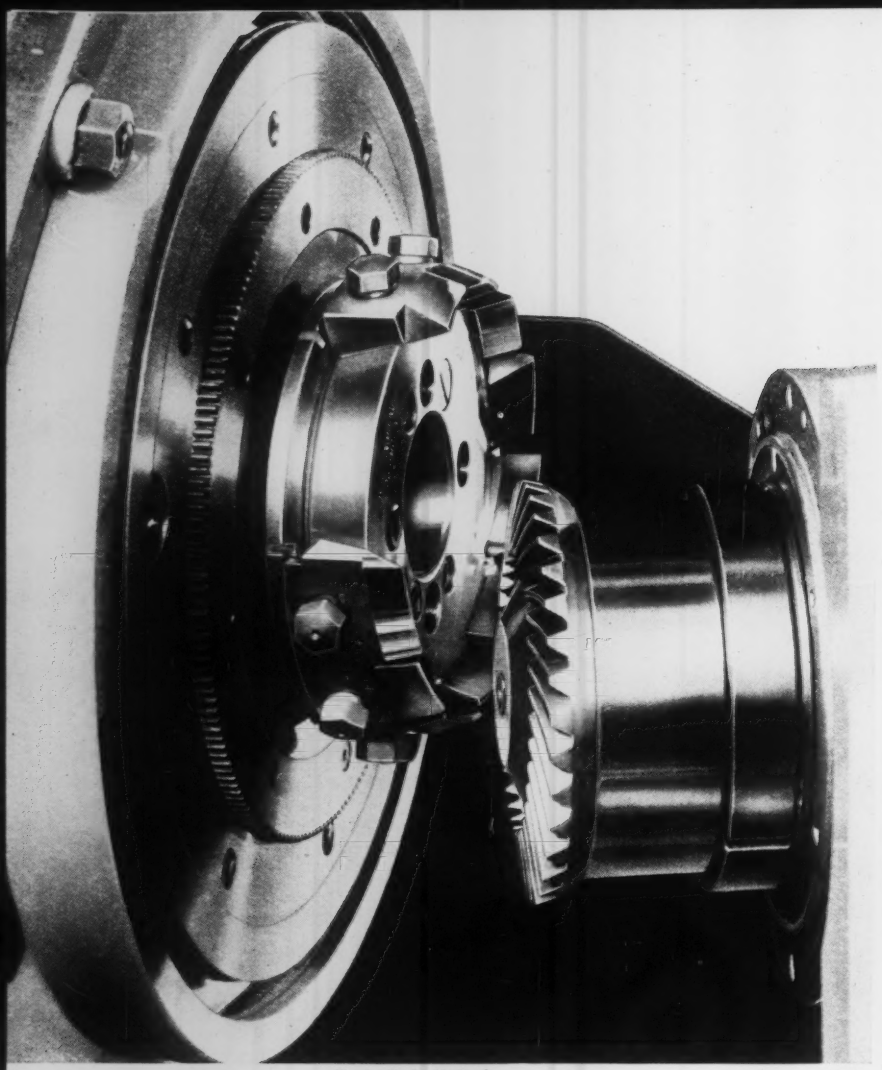
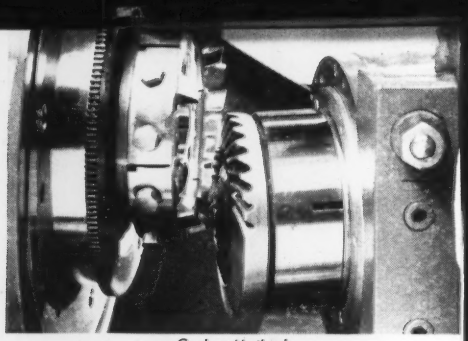
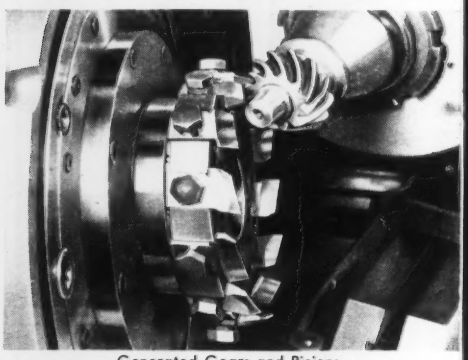


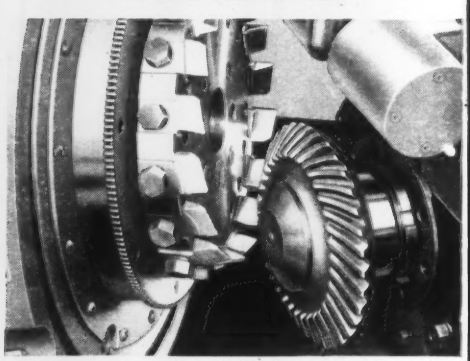
Single Cycle Method



Cyclex Method



Generated Gears and Pinions



Unitool Method

Cut gears with *four* different methods on *one* machine

If you expect your gear needs to change over the years you'll appreciate the exceptional versatility of the Gleason No. 108 Hypoid Generator. With this one machine you can cut both gears and pinions by four different methods:

Single Cycle® Method. Using this method you can cut nongenerated gears four to five times faster than previously possible on machines of this type. Cradle and work head are locked in position. The last rotation of the Single Cycle Cutter finishes both sides of a tooth space. You cut the mating pinions on the same machine using the conventional single-roll Generating Method.

Cyclex® Method. For certain applications you can use the extremely fast Cyclex Method on the No. 108 Generator. You cut nongenerated gears in one completing operation from the solid blank.

Generated Gears and Pinions. You can produce both gears and pinions on this machine with the Generating Method. Here, a relative rolling motion takes place between gear or pinion and the rotating cutter.

Unitool* Method. If you want to cut small quantities of spiral bevel, Zerol® bevel, or hypoid gears with a minimum of tooling, you can use the Unitool Method. You cut both gears and pinions with a single cutter. This method is particularly useful for experimental gears for prototype work.

The No. 108 Generator cuts gears up to 8½" diameter at a 10:1 ratio and to a maximum of 4 DP. You can get the same versatility in cutting larger gears with the No. 118 Hypoid Generator which handles gears up to 18" diameter, 10:1 ratio, to a maximum of 2 DP. A third model, the No. 28 Hypoid Generator, cuts gears up to 33" diameter at 10:1 ratio, 1½ DP.

Send for free bulletins on all three machines.

*Trademark

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GLEASON WORKS

Builders of bevel gear machinery for over 90 years

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Herman Pneumatic gen. mgr.

PAUL N. STANTON
Clearing Machine div. mgr.

J. F. CROASDALE
Revere Copper v. p.

GEORGE M. WHITE
Heppenstall plant mgr.

Paul G. Jacka was appointed general manager, **Herman Pneumatic Machine Co.**, Pittsburgh. He is at the company's plant in Zelienople, Pa. Mr. Jacka was executive assistant to the president of J. I. Case International.

Paul N. Stanton was named manager, machine tool division, **Clearing Machine Corp.**, Chicago, division of U. S. Industries Inc.

Standard Steel Corp., Los Angeles, named **Roy C. Heacock** manager of its new Cryogenics Div. (manufacturing and engineering facilities for alloy fabrication). **Edward L. Maguire** was named sales manager for the division. Mr. Heacock was director of engineering for Axelson Mfg. Co. Mr. Maguire was sales and executive manager of Alloy Fabricators Div., Continental Copper & Steel Industries Inc.

William P. Youngquist was made assistant to vice president-commercial, **Jessop Steel Co.**, Washington, Pa. He will also assist in sales direction for the new subsidiary, Green River Steel Corp., Owensboro, Ky.

Herman E. Bakken, vice president of **Aluminum Co. of America**, New York, and general manager of its refining division, retired. He is succeeded as manager of the division by **J. Ranald Fox**, former assistant manager.

Richard D. Wright was elected president, **Waukesha Foundry Co.**, Waukesha, Wis. He succeeds the late **C. C. Smith.**

J. F. Croasdale was elected a vice president of **Revere Copper & Brass Inc.**, New York, and appointed executive head of the Baltimore division. He was sales manager of the division.

Russell M. Fellows, vice president and treasurer, **Fellows Gear Shaper Co.**, Springfield, Vt., was elected chairman.

Federal Pacific Electric Co., Newark, N. J., appointed to engineering posts **Dr. Andrew A. Halacsy** as a staff development specialist; and **Gordon O. Perkins** as manager of the company's development engineering department, Eastern Switchgear Div.

Richard W. Clare Jr. was made manager of aluminum sales for **Edgcomb Steel of New England Inc.**, Milford, Conn.

Arthur W. Ostrander was elected vice president-sales, **General Metals Corp.**, Oakland, Calif. He was sales manager of Enterprise Engine & Machinery Co., sales subsidiary.

J. M. Norris was named factory manager of **Marquardt Aircraft Co.**'s ramjet manufacturing facility in Ogden, Utah. He was assistant manager of quality control at the aircraft engine division of Ford Motor Co.

Alvin E. York was made sales manager; **Wendell V. Richards**, assistant sales manager for the construction machinery division of **Clark Equipment Co.**, Benton Harbor, Mich.

George M. White was made Pittsburgh plant manager for **Heppenstall Co.**, responsible for manufacturing, engineering, and sales. He was staff assistant to the works manager, Wisconsin Steel Div., International Harvester Co.

W. C. Loeman was elected president, **Parker Aircraft Co.**, Los Angeles, subsidiary of Parker-Hannifin Corp., Cleveland. He was vice president-manufacturing. **R. W. Cornell**, vice president of Parker-Hannifin, and for the last three years also president of Parker Aircraft, returns to Cleveland to be in charge of planning and marketing for all industrial products.

Raytheon Mfg. Co., Waltham, Mass., receiving tube division, named **Joseph J. Grabiec** marketing manager; **George Loomis**, manufacturing manager. Mr. Grabiec was tube sales manager for Lansdale Tube Co. Mr. Loomis was manager of Sylvania Electric Corp.'s Burlington, Iowa, receiving tube plant.

Diamonite Products Mfg. Co., Shreve, Ohio, a division of United States Ceramic Tile Co., appointed **Edwin J. Rogers** general manager; **R. C. Mulligan**, sales engineer.

B. C. Hammer was made plant superintendent of **Elizabeth Carbide Die Co. Inc.**, McKeesport, Pa. He was superintendent, Mancelona Div., Arthur Colton Co.

Thomas E. Moffitt was elected president of **Marble-Nye Co.**, Worcester, Mass., subsidiary of Hooker

P. L. DAFOE N. C. McNUTT

Acme Steel division vice presidents

MORRIS SMITH GEORGE A. SCHNEIDLER

industrial engineers at Armco Div.

Chemical Corp., of which Mr. Moffitt is also president.

Acme Steel Co., Chicago, promoted **P. L. Dafoe** to vice president of its new fabricated materials division (former steel products division); **N. C. McNutt** to vice president-strip steel sales division. **A. E. Russert** was made sales manager, strip steel sales division, and **J. R. Sansom** was made sales manager, fabricated materials division.

Joseph H. Reitz, district manager of **Republic Steel Corp.'s** northern coal mine district, with headquarters in Uniontown, Pa., was assigned to the general offices in Cleveland as manager of safety for coal and ore mines. He continues to be located in Uniontown, and is succeeded there by **Joseph N. Hedding.**

J. R. Lemmon was made eastern regional manager, **Elliott Co.**, at Philadelphia. He is replaced as district manager of the Philadelphia office by **H. D. Moll.**

Carl F. Krehbiel was appointed western sales manager, **Ainsworth-Precision Castings Co.** He is at Chicago, in charge of sales for plants there and in Rockford, Ill.

E. A. March was made division superintendent-technical services at **Crucible Steel Co. of America's** Midland, Pa., Works. He was assistant works manager, Sanderson-Halcomb Works.

Beckman Instruments Inc., Fullerton, Calif., appointed **Max D. Liston** director of engineering; **Thomas V. Parke**, director of product standards; **Earl C. Janson**, director of manufacturing.

Morris Smith and **George A. Schneidler** were promoted to division industrial engineers, **Armco Div.**, Armco Steel Corp., Middletown, Ohio. They formerly headed industrial engineering at the corporation's Middleton Works and Middletown fabricating plant.

Dr. Arthur Uhlir Jr. was made director of semiconductor research and development at **Microwave Associates Inc.**, Burlington, Mass.

Robert L. Rachor was elected president of **Edward A. Lynch Machinery Co. Inc.**, Wynnewood, Pa. He succeeds **Edward A. Lynch**, who becomes vice president.

Robert Sellin, assistant general manager and comptroller, **Midland Screw Corp.**, Chicago, transfers to the Los Angeles plant. In addition to his regular duties, he will be Los Angeles branch manager. Midland sales on the West Coast for commercial and aircraft parts are under **Lee B. Doddridge**, vice president in Los Angeles.

Joseph A. Wilson was named manager of a new branch sales office in New York for **Pesco Products Div.**, Borg-Warner Corp.

Scullin Steel Co., division of Universal Marion Corp., appointed **Bransford W. Crenshaw** (vice president-Chicago) in charge of railroad sales to succeed **Robert C. Geekie**, resigned. Mr. Crenshaw remains at Chicago. **Robert A. K. Smith** was made St. Louis district sales manager.

Don C. Stewart was named to coordinate General Motor Corp.'s **AC Spark Plug Div.'s** new beryllium gyro program for missile guidance systems, Milwaukee. He was manager of GM's New Departure Div. plant, Sandusky, Ohio.

Controls Co. of America, Schiller Park, Ill., appointed **Donald M. Strathearn** (vice president) as director of sales for appliance and automotive controls. He succeeds **Gilbert R. Calkins**, resigned. Mr. Strathearn was director of engineering.

T. R. Evans was named sales manager for the fine metals and chemicals division of **Electro Metallurgical Co.**, division of Union Carbide Corp.

William E. Thornley was made sales manager, bulk handling division, **Jervis B. Webb Co.**, Detroit.

William F. Mott was promoted to superintendent of steel production at the Houston mill of **Sheffield Div.**, Armco Steel Corp.

Leigh V. Howlett was made product engineer for Thor, Regulus, and other military programs at the Flint, Mich., plants of **AC Spark Plug Div.**, General Motors Corp.

C. R. Zink was named to direct general sales of automotive original equipment for **Electric Auto-Lite Co.'s** electrical products group, Toledo, Ohio. He was chief of sales engineering.

Thomas N. Parlon was named sales manager for electric lift trucks, **Yale Materials Handling Div.**, Yale & Towne Mfg. Co., Philadelphia.

Robert W. Keenan was named manager of production planning and

Firth Sterling ...

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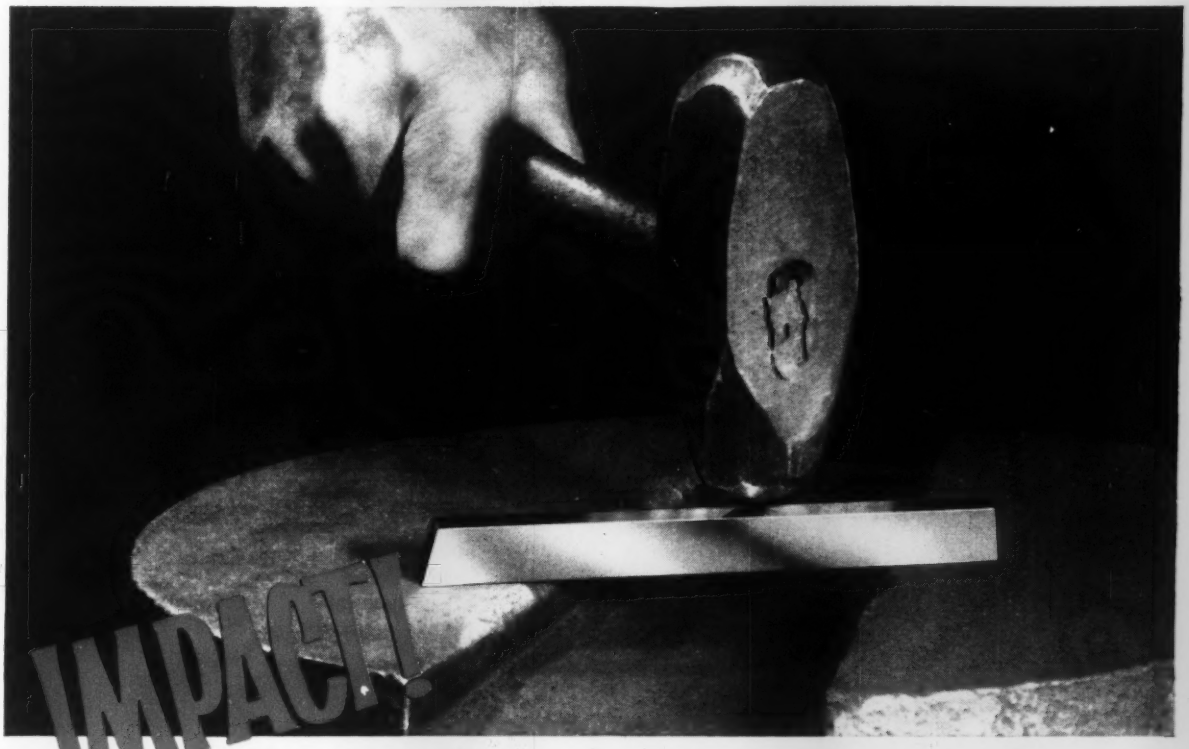

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FIRTH STERLING TRADE MARK

ETHAN A. SMITH JR.
new post at Beryllium Corp.

J. C. HYDRICK
heads Porter's Disston Div.

E. L. HAZARD
Continental Can v. p.-metals

FELIX W. BRAENDEL
Groov-Pin president

R. J. RUCCI
Rohr Aircraft purchasing

WILSON T. GROVES
Dana chief metallurgical eng.

control, **Sharon Steel Corp.**, Sharon, Pa. He was assistant manager, order and production planning.

Felix W. Braendel was elected president of **Groov-Pin Corp.**, Ridgefield, N. J. He was executive vice president. **Mrs. E. F. Schniewind** was named vice president-secretary; **F. O. Becker**, vice president-treasurer.

R. J. Rucci was made purchasing manager at **Rohr Aircraft Corp.'s** Chula Vista, Calif., plant. He will also supervise purchasing and warehouse functions, Los Angeles.

R. R. Pryor was named vice president-sales, **Trion Inc.**, Pittsburgh.

J. W. Antonides was made assistant general manager, **Reaction Motors Div.**, Denville, N. J., Thiokol Chemical Corp. He continues as director of programs. **Richard F. Whitcomb** was made assistant to the general manager, continuing as public relations manager. **Thomas H. Johnson Jr.** was made director of administration.

Dana Corp., Toledo, Ohio, appointed **Wilson T. Groves** chief metallurgical engineer to succeed **S. L. Widrig**, retired. He joined the company in 1948 as a metallurgical engineer.

Elmer E. Burk was made general manager, **Buffalo Brake Beam Co.**, with headquarters at the Lackawanna, N. Y., plant.

Charles W. Schott was made development engineer, technical development, at **Crucible Steel Co. of America**, Pittsburgh.

Richard A. Line fills the new post of marketing services manager, **Hussmann Refrigerator Co.**, St. Louis. He is succeeded as chief engineer by **Donald E. Friedman.**

Sam N. Craig was appointed chief engineer of **Orr & Sembower Inc.**, Reading, Pa.

Thomas L. Case joined **C. I. Hayes Inc.**, Cranston, R. I., as assistant to the chief engineer. He was with Westinghouse Electric Corp.'s industrial heating division.

Ethan A. Smith Jr. fills the new post of manager-development engineering for **Beryllium Corp.**, Reading, Pa. **Charles L. Huesman** was made manager, safety tool sales.

J. C. Hydrick was named vice president and general manager, **Disston Div.**, Philadelphia, H. K. Porter Company Inc. He was assistant general manager, Riverside-Alloy Metal Div.

E. L. Hazard was elected vice president in charge of the central metal division of **Continental Can Co.**, New York. Former director of staff to the executive vice president, metal operations group, he succeeds **William M. Cameron. Lawrence Wilkinson** was elected executive vice president-finance and administration. He was executive vice president for glass and plastics, and is succeeded by Mr. Cameron. **Charles B. Stauffacher**, financial vice president, becomes executive vice president in charge of the Robert Gair Paper Products Group, effective Jan. 1 when **Norman F. Greenway** reaches retirement.

C. E. Reynolds was elected vice president of **Haldeman Pipe Co.**, Los Angeles.

John R. Pfann was named market research supervisor for **Callery Chemical Co.**, Pittsburgh.

Frank A. Anderson was made Seattle district office manager for **Chase Brass & Copper Co.**

OBITUARIES...

Philip B. Niles, 56, a vice president of **Yale & Towne Mfg. Co.**, New York, died Sept. 24.

C. J. Pankow, 72, retired treasurer and chief engineer, **Crosby Co.**, Buffalo, died Sept. 20.

Stewart J. Cort, 77, former vice president, steel division, **Bethlehem Steel Co.**, Bethlehem, Pa., died Sept. 23. He retired last December.

Clifford H. Keen, 58, New York divisional sales manager, **Hubbard & Co.**, died Sept. 18.

16 Ton "Gas Mask" for a Blast Furnace

Diversity in the production of steel castings is routine in the foundries of Erie Forge & Steel Corporation. For example, this cast steel blast furnace bell.

The 16 ton lower bell casting teams up with the one ton cast steel upper bell to distribute solids to the blast furnace without loss of gasses . . . a job which requires high quality steel of accurate as-cast dimensions.

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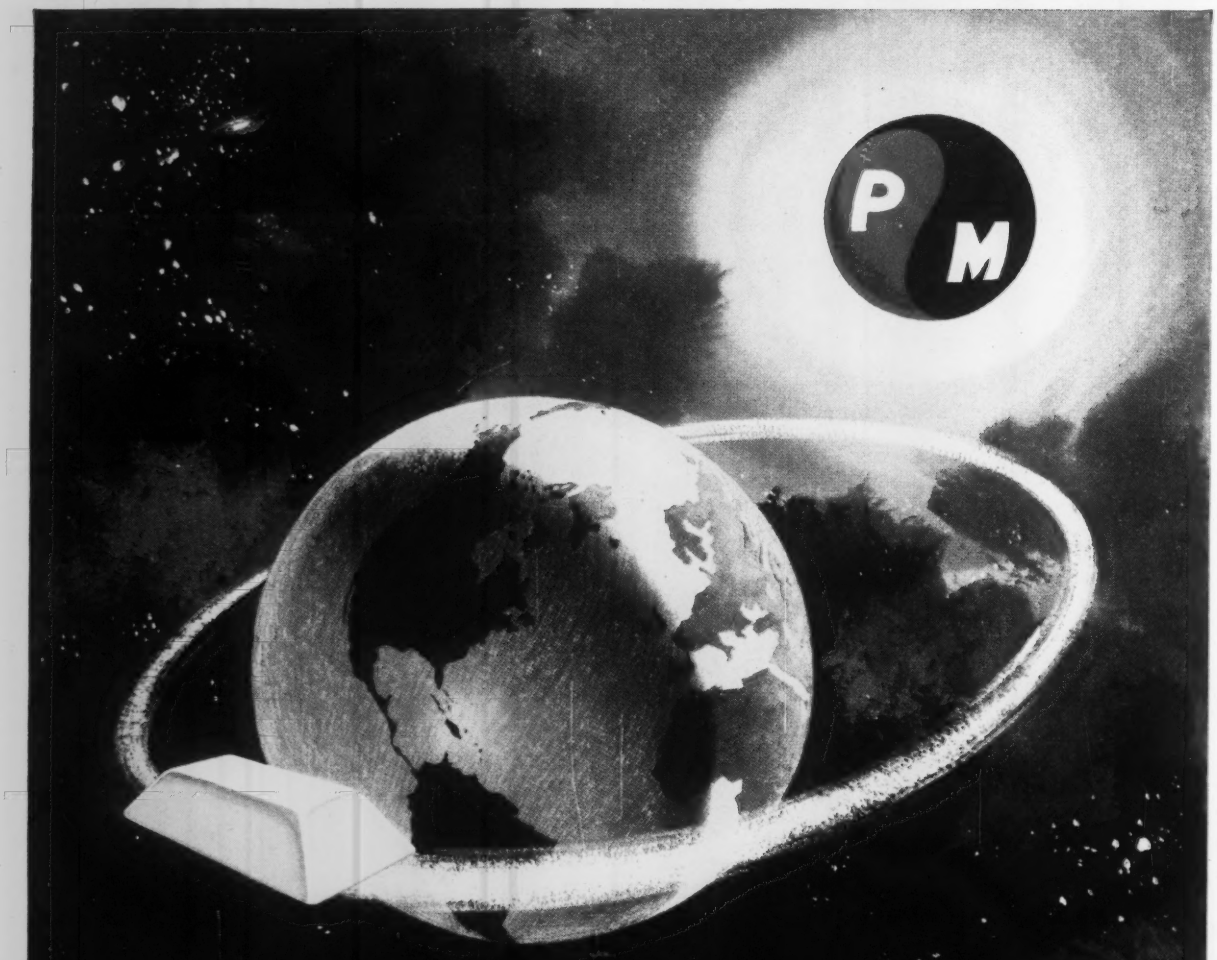

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Industrial Gas Demand Gains

Use of oxygen and nitrogen for metalworking, construction, and missile development continues to increase. Linde and Air Reduction building more plants to augment supply

OXYGEN AND NITROGEN capacity continues to climb steadily to meet the growing demands from the metalworking industry. Linde Co., a division of Union Carbide Corp., New York, is building an oxygen plant at Middletown, Ohio, and an oxygen and nitrogen plant at Pittsburg, Calif. Air Reduction Sales Co., a division of Air Reduction Co. Inc., New York, is constructing an oxygen and nitrogen plant at Denver.

Middletown Plant — Linde will build and operate a 130-ton-a-day oxygen plant for Armco Steel Corp. on property leased from the company. The high purity gas will be piped to various locations at the Middletown Works. A sizable volume of oxygen is slated for enrichment of open-hearth furnace air. Steel conditioning, scrap cutting, maintenance, and other general steel mill requirements will take the balance.

Armco's present requirements are satisfied with oxygen as liquid. When the on-site plant goes into production, Linde's present production and distribution facilities will assume the role of a standby plant.

So far this year, Linde has announced the start-up of 11 on-site oxygen plants with a combined capacity of about 1100 tons a day. One at Armco's Ashland (Ky.) Works has a capacity of 115 tons a day.

Pittsburg Plant — The multimillion dollar plant which Linde is building at Pittsburg, Calif., will have a capacity of 300 tons of liquid oxygen and nitrogen daily. It is scheduled for completion in early 1960 and will supply a nine-state area. The plant will be operated 24 hours a day, seven days a week, under the supervision of N. R. Harris, operating superintendent.

The first section of the plant will go into operation on June 1, 1959, with a capacity of 115 million cu ft a month. When additional equipment goes on stream Oct. 1, 1959, the plant will produce more than 220 million cu ft monthly.

Denver Plant—The oxygen and nitrogen plant at Denver is scheduled to be in operation by Jan. 1, 1959. Estimated cost of the Airco facility, including related distribution equipment, will be about $600,000. William O. Brown is in charge of all operations at Denver.

Output of the plant will be used for a number of industrial purposes, including metalworking, construction, and missile development.

Braeburn Buys Equipment

Braeburn Alloy Steel Co., Braeburn, Pa., installed a Blaw-Knox bar turner. Designed for exclusive use of carbide tools in centerless turning, the machine features a new feed roll section, hydraulic loading on each feed roll, and air clamping on the back end. It handles ½ to 3 in. bars at speeds up to 12 fpm. Braeburn recently added a 2-roll straightener and a 1500-ton forging press as part of its expansion program.

Machinery Firm Expands

Layton-Greenfield Inc., custom designer and builder of paper mill machinery, is expanding. Additional facilities recently acquired in Coatesville, Pa., have more than doubled the capacity of its plant. The executive, engineering, and purchasing staffs will continue to operate at the Reservoir Road plant.

Valcon Broadens Service

Valcon Galvanizing Inc., Natrona, Pa., is installing a galvanizing kettle measuring 40 ft 2 in. long, 51 in. wide, and 6 ft 10 in. deep. Due to the unique size of this facility, Valcon will process literally anything that can be galvanized. By providing 40 ft of headroom, it is able to bring even the biggest steel members straight out of the kettle, enabling them to be drained "the long way" to give the smoothest possible zinc finish. The kettle was built by the Lukenweld Div., Lukens Steel Co., Coatesville, Pa.

J&L Improves Detroit Unit

Jones & Laughlin Steel Corp., Pittsburgh, installed new facilities at its steel service center in Detroit for slitting and banding a wide range of steel and aluminum. The slitting line can handle coils with inside diameters of 16 in. and larger. It is equipped with precision x-ray gaging equipment for closely controlled tolerances and includes an automatic bander. Capacity of the slitting unit is 49 in. in width. Heavier coils can be processed, depending upon the outside diameter. A 12-in. auxiliary slitting line also has been installed for small coils and short runs to provide for a wider and more flexible range of operation.

Instrument Firm Expands

Cleveland Instrument Co. expects to move into its new building at 6220 E. Schaaf Rd., Cleveland, early in November. The firm makes precision measuring instruments.

Continental Can To Build

Continental Can Co., New York, will expand its Tampa, Fla., can plant with a 25,000 sq ft warehouse. Orren R. McJunkins is vice president of the Eastern Metal Div.

Alcoa Boosts Production

Aluminum Co. of America, Pittsburgh, has placed in operation the first of two new potlines at its Massena, N. Y., plant. The second one is scheduled to begin production on Oct. 15. The two new lines have an initial capacity to produce 54,000 tons annually. This plant is the first industrial consumer of electricity from the St. Lawrence project of the Power Authority of the State of New York. The Grasse River generating station of the St. Lawrence River Power Co., an Alcoa subsidiary, will be closed.

The two new Massena potlines complete the first phase of a $25-million modernization and expansion program to utilize St. Lawrence power. The company will reactivate two lines, later this year, pro-

viding an additional 36,000 tons of metal annually. As the new smelting capacity is started up, four small potlines which are obsolete will be shut down.

Forms Chemical Unit

American Charcoal Co., Detroit, formed a Chemical Products Div. to develop and manufacture chemicals used in the diecasting and metalworking industries. The firm's products include die release agents, die lubricants, die cleaning chemicals, synthetic machining coolants, and germicides used in metalworking.

Jarvis Steel Expanding

Jarvis Steel Corp. constructed a 4000 sq ft manufacturing facility adjacent to its main plant at 15203 Pacific Coast Highway, San Diego, Calif.

Buys Mill Facilities

Copperweld Steel Co., Pittsburgh, purchased certain regular mill facilities (constructed by the government) at its Superior Steel Div. plant at Carnegie, Pa. The purchase (at the depreciated value of $781,120) included: An annealing and pickling line, a hot mill coiler, and related utilities on the strip steel mill.

Forms Engineering Unit

Anaconda Co., New York, organized a subsidiary, Anaconda-Jurden Associates Inc. The new organization, formerly the engineering department of the parent firm, offers a complete service in the planning, designing, engineering, and construction of industrial plants of major size. Officers include: President and chief engineer, Wilbur Jurden; vice president and assistant to the chief engineer, H. H. Boschen. Projects under the firm's supervision (design and construction) include: $110-million El Salvador sulfide copper plant of Andes Copper Mining Co., northern Chile; Anaconda's $40-million integrated aluminum fabricating plant at Terre Haute, Ind.; and Chile Exploration Co.'s 50,000 kw. high pressure powerplant at Tocopilla.

Havir Gets Diebel Line

Havir Mfg. Co., St. Paul, acquired the Diebel Hi-Speed automatic presses from Di Machine Corp., Chicago. All manufacturing will be done at Havir's St. Paul plant. Distribution of the Diebel presses will be handled by Sales Service Machine Tool Co., distributor of Havir's Press-Rite presses.

Opens Engineering Center

National-U. S. Radiator Corp. will dedicate its million-dollar Engineering Center at Johnstown, Pa., Oct. 16. The 40,000 sq ft structure will house the corporation's general engineering and research staff and general manufacturing executives. Its facilities include those for testing domestic and commercial boilers, air conditioning units, and other products.

NEW PLANTS

Niagara Industries Inc. opened its new plant at 4525 Bailey Ave., Buffalo 26, N. Y.

Scans Associates Inc. opened its offices and plant at 12940 Farmington Rd., Livonia, Mich. The firm makes hydraulic, pneumatic, mechanical, and electrical testing fixtures for production and quality control in the automotive, aircraft, and missile industries. President is V. G. Converse III.

Tonolli Co. of Canada Ltd. is constructing a $1-million plant in the Dixie industrial area of Toronto, Ont. Nonferrous metal ingots will be produced.

William G. Wetherall Inc. is erecting a 50,000 sq ft warehouse at 1600 Cherry Hill Rd., Baltimore, Md. Joseph A. Doyle is president of this steel distributing firm.

Griffen Wheel Co., Chicago, is operating its new EQS cast steel wheel plant at Muncie, Kans. EQS wheels are made of quality controlled electric furnace steel, poured into permanent graphite molds through a process developed by Griffen. The plant has a capacity of 120,000 railway freight car wheels a year. The firm is a subsidiary of American Steel Foundries.

CONSOLIDATIONS

Jersey Bolt & Spike Corp., Newark, N. J., acquired the manufacturing facilities of **Flannery Bolt Co.**, Bridgeville, Pa. Manufacture of railroad specialties, including stay bolts for steam locomotives, will be transferred to Newark and operated by the newly established Flannery Products Div.

Hussmann Refrigerator Co., St. Louis, acquired **Duro-Consolidated Inc.**, Redwood City, Calif., manufacturer of metal display shelving and allied lines. The property will be operated as a wholly owned subsidiary.

NEW ADDRESSES

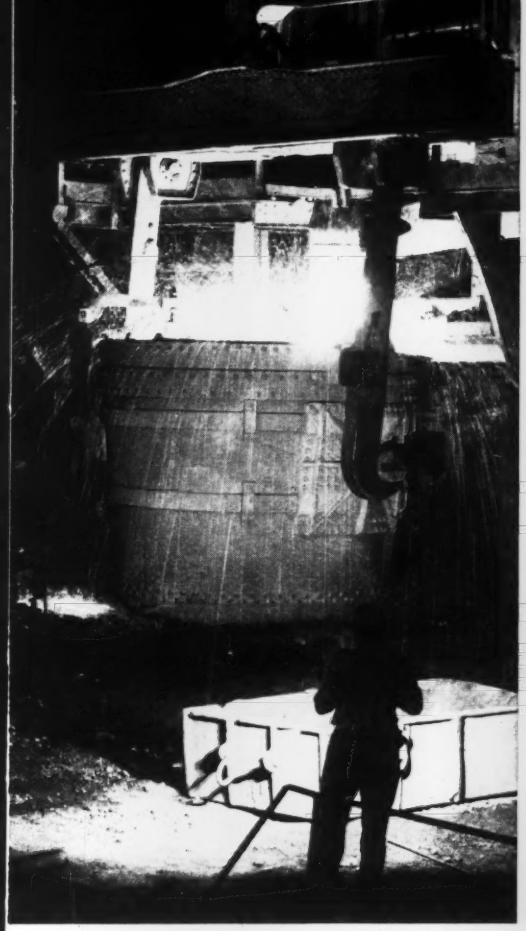
Beach-Russ Co. moved its general sales office to larger quarters at 420 Lexington Ave., New York 17, N. Y. The company makes rotary high vacuum pumps, compressors, and gas boosters.

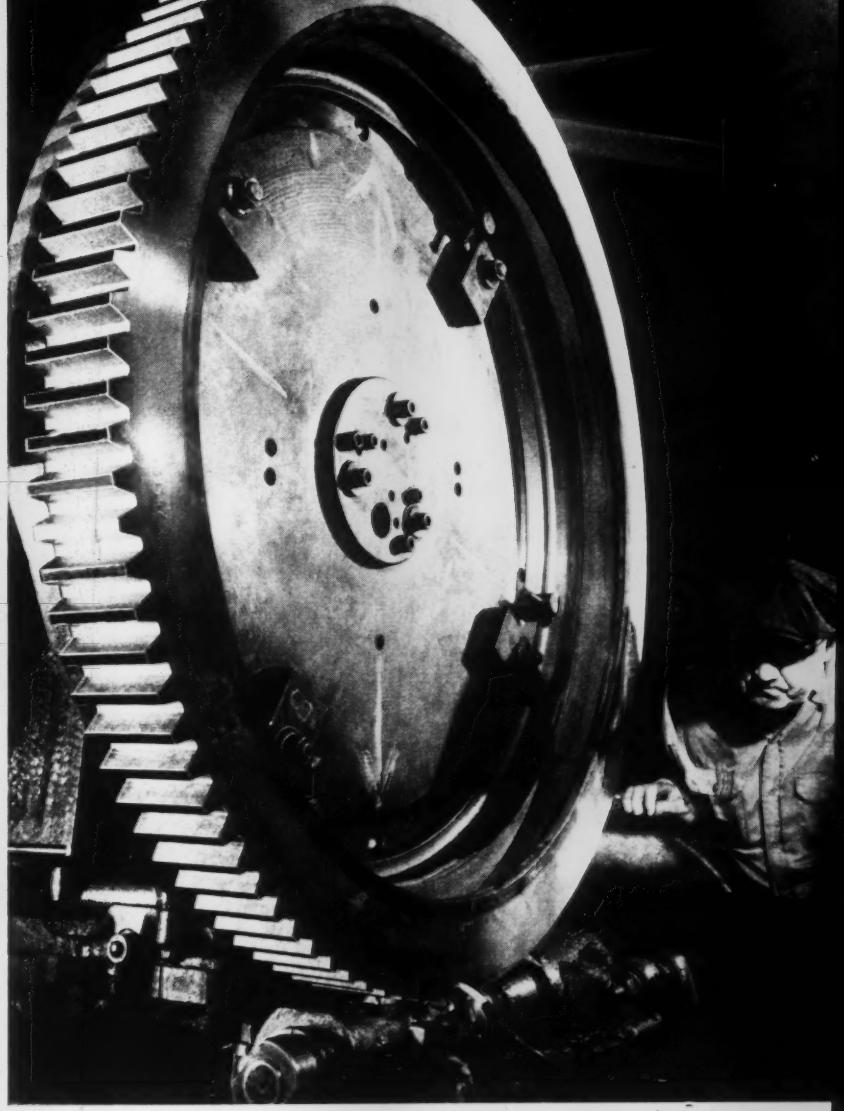
Abbe Engineering Co. moved its general sales office to larger quarters at 420 Lexington Ave., New York 17, N. Y. The firm makes industrial pebble, ball, and jar mills; mixers; conical blenders; cutters; sifters; and Kent ring-roll mills.

Trans-Weigh Co. moved to its new plant at King of Prussia, Pa. The firm makes belt conveying and control systems.

Bailey Meter Co., Cleveland, moved its district office to 150 E. 43rd St., New York 17, N. Y. H. C. Wheaton is district manager. The firm makes industrial instruments and automatic controls for power and process industries.

Ex-Cell-O Corp., Detroit, moved the headquarters for Bryant gages and surface plates from Springfield, Vt., to the Ex-Cell-O plant in Greenville, Ohio. Ex-Cell-O acquired Bryant Chucking Grinder Co. earlier this year. Russell Scholl is in charge of sales of the Bryant line.





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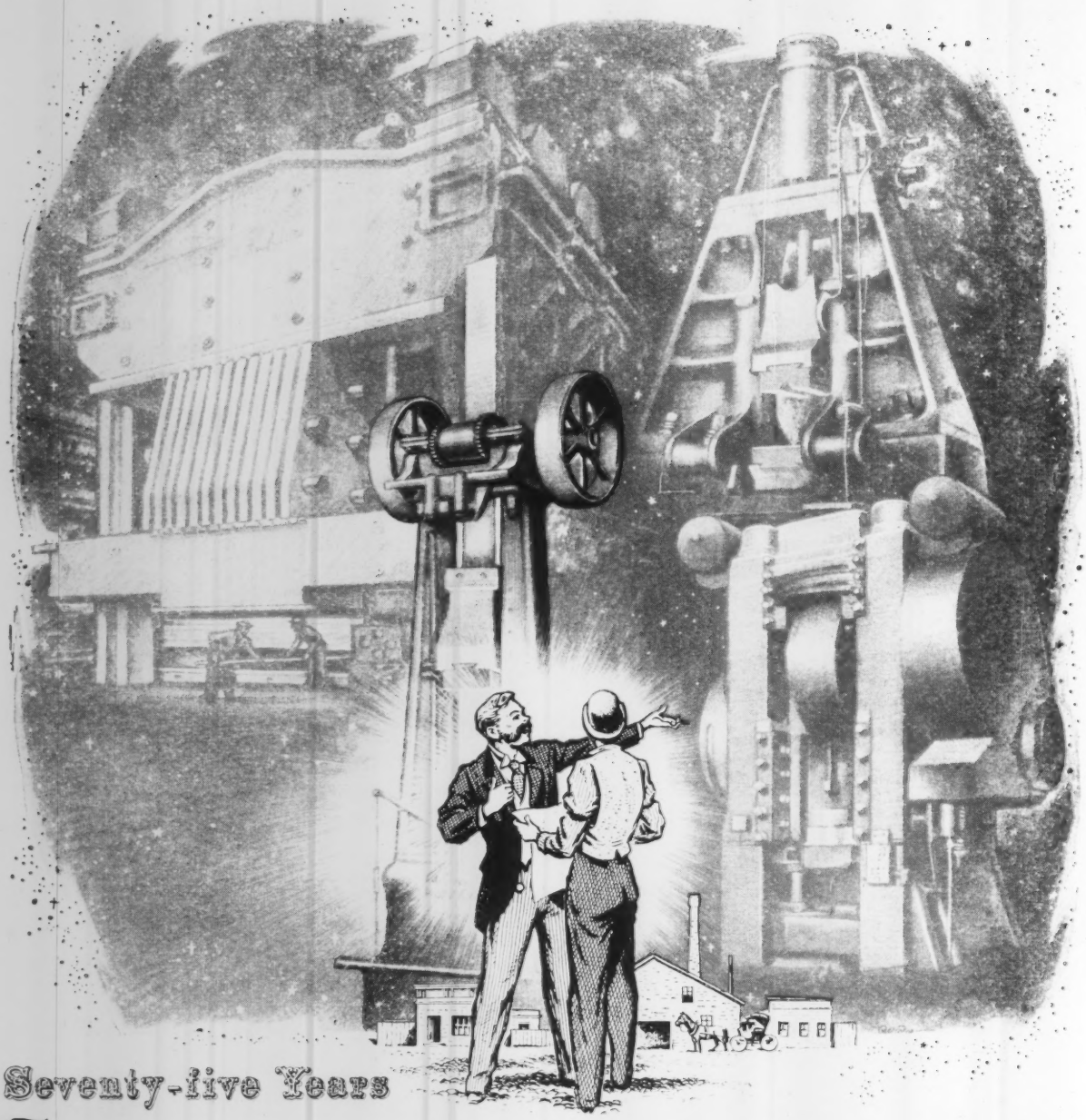

Seventy-five Years

THERE WAS a growing surplus in the United States Treasury—the Polygamy Act was passed—letter postage was reduced from three cents to two cents—the Brooklyn Bridge was opened—standard time was adopted—in 1883, when two young men, just graduated from Worcester Polytechnic Institute, established the business bearing their names—WYMAN-GORDON. The total capital was $27,000.

Integrity, initiative, ambition and ability were theirs. Endowed with these qualities and privileged to operate under that unique American system of free, private, competitive enterprise the Company prospered and grew.

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FORGINGS OF ALUMINUM • MAGNESIUM • STEEL • TITANIUM

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STEEL
October 6, 1958

Technical Outlook

HEAT TREATING OVERCOAT—High temperature heat treating often produces excessive scaling, so North American Aviation, Los Angeles, developed a compound which prevents such attacks. Basic ingredient: An inexpensive clay. The formula is effective on stainless, nickel chrome, and alloys of cobalt, titanium, and copper. North American says it has a patent pending.

FASTER WELD PREPARATION—Top grade welds in heavy plates require a J-shaped groove—a welder starts at the bottom to insure complete penetration. Linde Co., a division of Union Carbide Corp., New York, is nearly ready with a one shot nozzle that it says will flame cut such grooves more efficiently than present methods. Features claimed by Linde include complete dimensional control, no special plate preparation, and cutting speeds up to 75 ipm.

EXTRUSION OVER EXTRUSIONS—You can get aluminum bus bars and complicated extrusion cross sections covered with a continuous coating of rubber or plastic insulation. Geauga Industries, Middlefield, Ohio, has a device that handles metal up to $\frac{1}{8}$ in. thick with cross sections to 1 in. by $4\frac{1}{2}$ in., and 16 ft long.

CLEANER SMOKE—U. S. Steel engineers, trying for better ways to screen the dust from open hearth exhausts, will shortly try a wet gas scrubber at the Edgar Thomson Works, Braddock, Pa. Said to be the first test of such equipment on a large scale, the device will cool hot gases to 160° F and pass them through a water film. Solids are pumped to a thickener while the gases undergo further treatment.

EXOTIC MACHINING— Aircraft production men, in their quest for practical ways to machine obstinate metals, conclude that their solution is most likely to come from one of the revolutionary machining approaches now being tried. Three methods seem to have the inside track: Hot machining at temperatures up to 1000° F, cold machining with the workpiece frozen to sub-zero temperatures, and ultrahigh speed machining with cutting rates as high as 150,000 sfpm. At least three aircraft manufacturers are working on the third method. One has modified a No. 6 Cincinnati milling machine which spins a 14-in. cutter at 38,000 rpm. All high speed work so far has indicated that the metal is removed efficiently and that the chips vaporize.

RESISTS CORROSION— A new alloy of aluminum which contains small amounts of nickel, iron, and titanium appears to be working out for protective jacketing of nuclear reactors. The alloy operates in corrosive steam at 1000° F and 600 psi. It was developed by Argonne National Laboratories, Lemont, Ill., and may point the way toward wider application of aluminum in severe environments.

RESISTS HIGH TEMPERATURES— Graphite is a top contender for use in missile exhaust nozzles. Its main drawback—poor oxidation resistance—is being overcome with metal coatings, says Stanford Research Institute, Menlo Park, Calif.

RADIATION CHANGES IRON—Magnetic properties of soft materials deteriorate when exposed in an atomic reactor. That will probably call for some changes in instrumentation for atomic-powered ships and planes, thinks U. S. Naval Ordnance Laboratory, Silver Spring, Md. It is continuing similar work on permanent magnet materials.

ALUMINUM PLATING—Standard Products Co., Cleveland, reports its development of a new method to put chromium directly on aluminum is pretty well along. The firm says pilot plant results look promising.

SAFE PAINT DIP—A number of Detroit automakers dip their parts in a nonburning paint that now comes in colors (it used to be made in black only). Harding Chemical Corp., Detroit, says its process uses half the space of former methods and has no drip loss, no wedging, nor loss of solvent.

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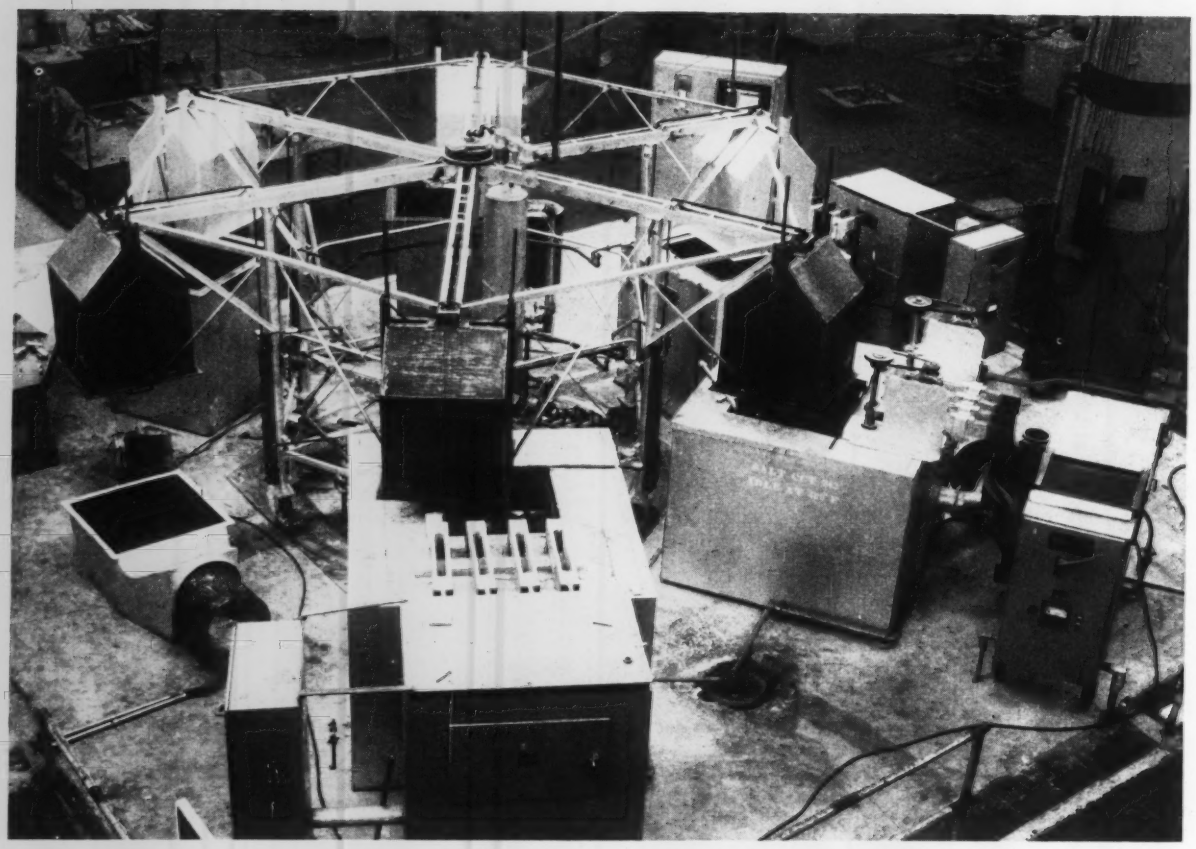


Overhead merry-go-round moves racks through six stations. Operator at left loads and unloads, controlling recycling with a pushbutton

Circular Layout Offers Shortcuts

Salt bath arrangement at Cadillac Tank Plant adds flexibility to in-line heat treating. Engineers say it's easy to incorporate changes. Operation and maintenance are simpler, too

CONTINUOUS salt bath heat treating offers these advantages when equipment is arranged in a circle rather than a straight line:

1. It saves space. A 750 lb-per-hour unit fits into an area 26 ft square.

2. It's easier to maintain and operate.

3. It's simpler to enlarge the operation or add new steps.

That's how the people at the Tank Plant, Cadillac Motor Car Div., Cleveland, feel about their installation. A. F. Holden Co., Detroit, designed and built the equipment, called it a "carousel."

Building Blocks—The unit heat treats welded track cleats for the Army's M-56 airborne gun carrier. They are made of 4130 steel about 3/16 in. thick, and weigh about 4 lb.

Each station has separate heating units and control panels. When one needs maintenance, the others in the line can still be operated. Vincent Richilano, assistant superintendent, Methods & Equipment Div., says that he likes the building block principle in automated installations. The reason: "They are more easily modified for expansion or change in product design."

Molten salt is an extremely fast way to heat treat. It also keeps distortion of parts at a minimum.

Six Stations — At Cadillac the process starts with a 1600° F heat, followed by a quench in a 400° F bath. After drawing at 700° F, parts are rinsed in hot water, followed by a dip in soluble oil which

aids later machining and prevents rusting in storage.

Parts are loaded on racks attached to an overhead fixture that looks much like the top of a merry-go-round. Each rack holds 24 pieces (a total of 120 lb). Double air cylinders move the racks up and down. They are controlled by a timer.

When a rack is loaded, the operator pushes a cycle button. Air cylinders move all racks up; the overhead fixture (carousel) indexes one station, and all racks lower into the next bath. Each indexing is timed for 12 minutes, although each rack can be raised or lowered independently.

Independent raising and lowering of racks accommodate slight differences in heating, quenching, or rinsing times. Carousel arms extend from a revolving center post. They are supported at the lower section by rubber-tired wheels which run on a steel track.

Safety features and limit switches prevent accidental movement.

Hoods are mounted at the end of the arms on the overhead fixture. They serve these purposes: 1. They retain heat in the part and reduce oxidation during transfer. 2. They stabilize fixtures to eliminate sway and keep furnace surface area at a minimum. This makes it possible to use smaller furnaces and less power consumption.

Some Chemical Details — Salt baths generally contain eutectic mixtures of inorganic salts which can be varied to fit several temperature ranges. The first bath at Cadillac (1600° F) contains a mixture of potassium and sodium chlorides with some additives to maintain neutrality and prevent decarburization. The quenching bath contains sodium and potassium nitrates with a coagulant to remove chloride carryovers from the first bath. The tempering bath is the same but without additives.

Other than lubrication of the mechanical parts, bath maintenance consists of removing the sludge formations and adding makeup materials.

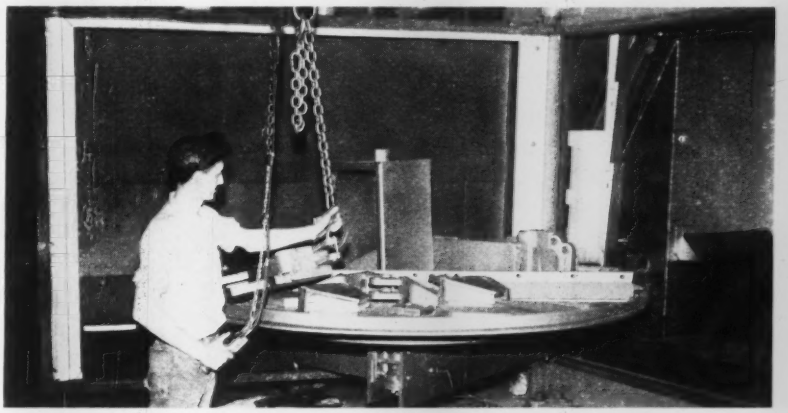
Water Addition — Holden Company, working with Cadillac, instituted the use of water additions to improve the quenching action of the 400° F bath. Water is added continuously through a small copper tube just above the agitation pump.

Edwin Breme, experimental metallugist, says there is no steam formation. The bath is much more fluid, he says, because the water is probably reabsorbed as water of recrystallization. (Continuous heat tends to reduce the amount held by the bath. Holden reports that one firm gets carburized C-1117 steel to Rockwell 64 without distortion or cracking by adding water to a marquench bath. The firm formerly could get only Rc 57 without the water.)

Iron, Steel Samples Offered

Eight new standard samples of ingot-iron and low-alloy steel are available from the National Bureau of Standards. Analyzed and certified for 17 elements, they are the first spectroscopic standards the bureau has certified for carbon and phosphorus content.

The samples are designed for control of composition in the iron and steel industry and for analysis of finished products by producer and consumer.



Spatter and scalefree work being removed from blast cabinet on swing table

Speeds Weldment Cleaning

Firm says airless blasting has saved 23.4 minutes in one application (30 vs. 6.6 minutes). Workloads weighing up to 10,000 lb can be handled. Method is simple

AN AIRLESS blasting table is saving more than $400 a week in labor at Joy Mfg. Co., Franklin, Pa. The 96-in. swing table (made by Wheelabrator Corp., Mishawaka, Ind.) handles the plant's daily production in 6 hours.

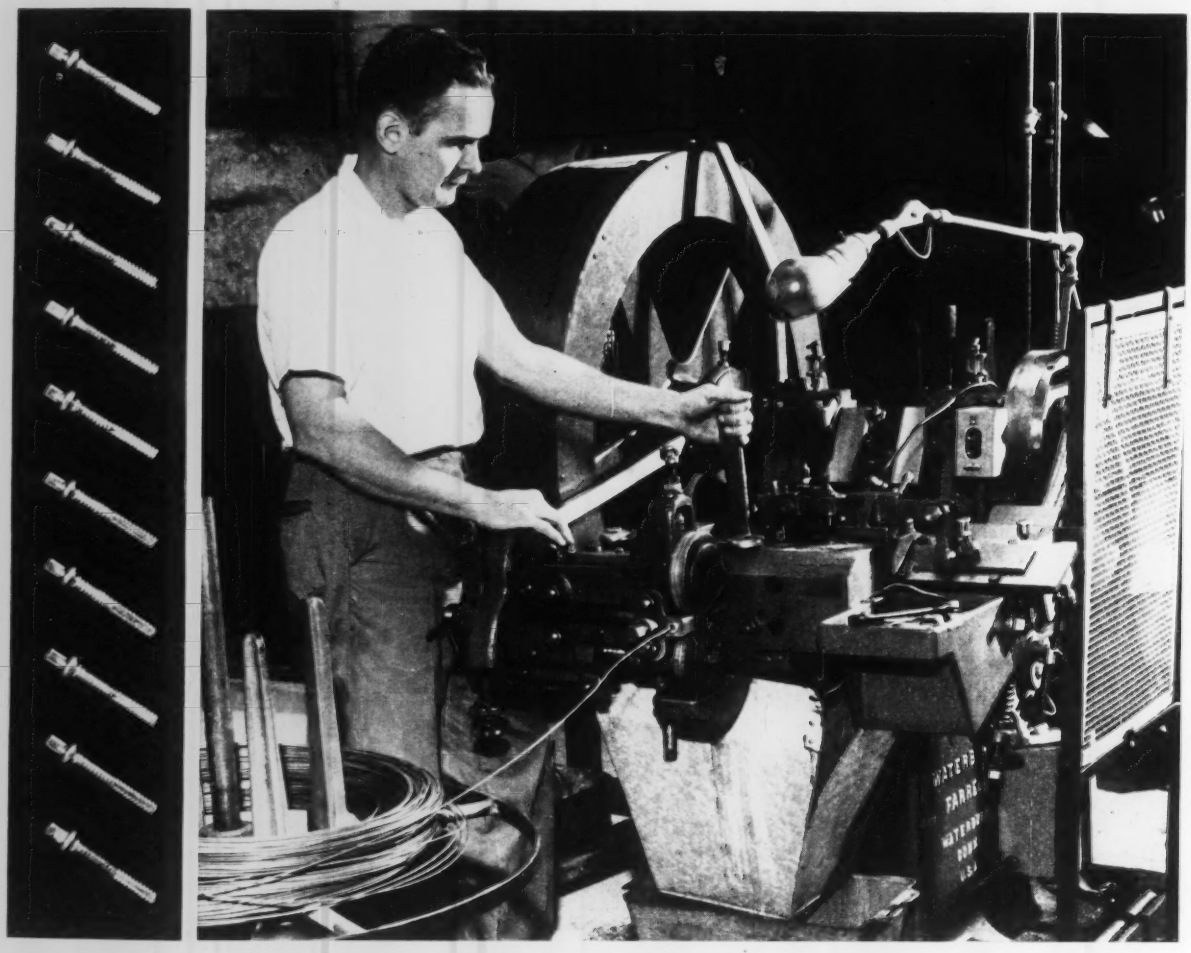
Comparison: Hand grinding and chipping used to take a minimum of 280 manhours weekly (sometimes as many as 360). The job is done in 30 manhours a week now.

Savings in cleaning some weldments run above 90 per cent. Examples: A pivot axle, 30 minutes formerly, vs. 7.9 minutes now.

Byproducts — Other operations, such as inspection and painting, are made easier.

Even though some weldments are highly complex, the company has not found it necessary to use air-blast touch-up equipment after the table operation.

The machine will handle workloads up to 54 in. high, 96 in. in diagonal length, and weighing up to 10,000 lb. No major maintenance has been required since the unit was installed in June, 1957.



This cold header . . .

How We Beat the Cost Crisis

Two Machines Save $14,766 a Year

THE MOST obvious answer to a production problem may, or may not, be the best one. In this case, manufacturing engineers at Underwood Corp., Hartford, Conn., passed up the obvious solution for one that multiplied the potential for savings.

About 7 million small screws for key-lever tension are needed to meet Underwood's annual demand for standard typewriters. They were turned out on a battery of 15 screw machines, working on a two-shift basis. Increasing demand for other screw machine products indicated that the company would have to get more machines to handle the load.

Factory supervisors came up with the idea that if the tension screws could be made on other equipment, there would be plenty of screw

THE JOB

Turn out 7 million screws a year

OLD METHOD

Cut and thread on 15 automatic screw machines

	per 100
Material	$0.084
Screw machine labor	0.184
Total	$0.268

NEW METHOD

Cold head and thread roll

	per 100
Material	$0.020
Cold forming labor	0.040
Total	$0.060

and this thread roller . . . cut costs 78%

They also release 15 screw machines for other work. Case history shows how close attention to methods pays off. This article is one of the top entries in the Cost Crisis Awards Competition. Look for another in next week's issue

machine capacity to handle their needs. They suggested a combination of cold heading and roll threading for the screws.

In their proposal to management, production men pointed out that the investment of about $10,500 in heading and threading equipment would surely pay for itself in the first year. Calculated annual savings: $14,766.

The company bought a solid die, double stroke toggle header, a manual feed roll threader, heading die, cone punch, heading punch, carbide quill insert, and a carbide cutoff knife.

The screw was redesigned for cold heading and roll threading. (No change in other typewriter components was necessitated.) The material was switched — from cold drawn hexagon steel bars to C-1006 heading wire.

Harvey Gittler, manufacturing engineering manager, points out that in addition to the production savings of more than 20 cents per hundred screws: "We released 15 screw machines that had a book value of about $2000 each, making $30,000 worth of additional equipment available."

New Designations for Stress-Relieved Tempers

-T 3 5 1

Aluminum Association designations like this will replace cumbersome phrases such as "stretcher stress relieved" and "stress relief stretched."

-T Denotes material is heat treated to produce stable tempers other than -F, -O, or -H.

3 First digit indicates the basic condition of the material. See table at right.

5 Second digit denotes the material has been stress relieved. The number "5" has been arbitrarily assigned.

1 Third digit indicates method of stress relief. Number "1" indicates stretching. Number "2" indicates compressing.

-T2 Annealed (cast products only).

-T3 Solution heat treated, then cold worked (wrought products).

-T4 Solution heat treated and naturally aged to a substantially stable condition (wrought or cast products).

-T5 Artificially aged only (wrought or cast products).

-T6 Solution heat treated, then artificially aged (wrought or cast products).

-T7 Solution heat treated, then stabilized (cast products only).

-T8 Solution heat treated, cold worked, then artificially aged (wrought products only).

-T9 Solution heat treated, artificially aged, then cold worked (wrought products only).

-T10 Artificially aged, then cold worked (wrought products only).

Aluminum Identification Simplified

THE Aluminum Association has assigned a new series of temper designations to selected aluminum mill products that have undergone stress-relief treatments.

Most large, wrought aluminum products are extensively machined to make parts such as integrally stiffened aircraft wing panels and extremely tapered sections. Warpage during machining is minimized by using wrought stock that has been stress relieved. Such processes as stretching or compressing minimize the residual stresses.

Three-Digit System — The new temper series, which applies only to the heat-treatable alloys, is composed of three digits following the letter "-T", such as -T351, -T851, and -T651. The digit in the first position indicates the basic temper. The second digit 5, arbitrarily assigned, is the "key" digit denoting that the material has received a stress-relief treatment.

The digit in the third place indicates the method of stress relief. Number "1" indicates stretching; number "2" indicates compressing. Numbers "3" through "9" have been reserved for other methods which might be developed.

No Property Change—In all instances, the general mechanical property level of the stress-relieved material is in the same area as that of material which has been heat treated, or heat treated and aged, but not specifically processed to relieve internal stresses.

The values for certain properties may be different. Small changes in guaranteed values from those now quoted may be made for the stress-relieved temper, as fast as test data are collected.

How It's Used—Some examples of alloys and products using the new temper: Solution heat treated 2024 plate stress relieved by stretching will be designated 2024-T351. This material, after artificial aging, will be designated 2024-T851. In similar fashion, solution heat treated 2014 and 6061 plate will be designated -T451 when stress-relieved by stretching. The artificially aged condition will be -T651.

Alloys in the 7000 series, such as 7075 and 7079, that have been stress relieved by stretching after solution heat treatment will be designated W51. In the artificially aged condition, they will be designated -T651.

Other Products—The same basic rules apply to extrusions, rods and bars, and forgings. To date, hand forgings are the only products that are stress relieved by compression on a commercial scale. The new designation 2014-T652 will be applied to 2014 alloy hand forgings that have been stress relieved by cold reduction after solution heat treatment and before aging.

The Aluminum Association says the new temper designations will simplify the identification of material that has been cumbersomely referred to and often stenciled as "stress relieved," "stretcher stress relieved," or "stress relief stretched."

Alloying of Solids

It may be done by high-speed bombardment with microscopic size metal particles

MICROMETEORITE bombardment, similar to the phenomenon that occurs in space, is being used by scientists at Wright Air Development Center (WADC), Dayton, Ohio, to combine incompatible materials in their solid state.

The Air Force researchers believe that solid state alloying may open a field to new material combinations never before possible. They also think it can be the key to materials which can cope with the problems of space.

New Accelerator—A solid particle linear accelerator will be built to propel solid particles (up to 0.025 in.) at velocities exceeding 50,000 mph. Higher speeds are theoretically possible.

The chemically stable material can be inserted into the crystalline lattice of another material. New molecular arrangements may be formed, creating new properties in a material, or combining the ideal properties of several materials.

Example—Aluminum boils to a vapor at 3740° F. Iridium begins to melt at 4450° F. The two materials cannot be combined in the liquid state. But through high speed particle bombardment, solid iridium particles could be inserted into the aluminum lattice. That combination could give aluminum better high temperature properties.

WADC scientists hope to synthesize materials which are difficult or impossible to combine with present laboratory procedures because of the prohibitively high temperatures required.

Organic Materials—Scientists also believe there is a possibility of polymerizing a family of compounds, such as silico-halides. Although theoretically possible, silico-halides cannot be polymerized through present laboratory methods because of the high energies required. Highly energized solid particles bombarded at the target material may be able to force the rearrangement in the chemical makeup.

Another possibility of solid particle bombardment at high speeds is the creation of a "perfect" vacuum for laboratory studies where an absolute void is necessary. The technique might be used to evacuate all traces of air in a chamber by bombarding air particles out the exhaust.

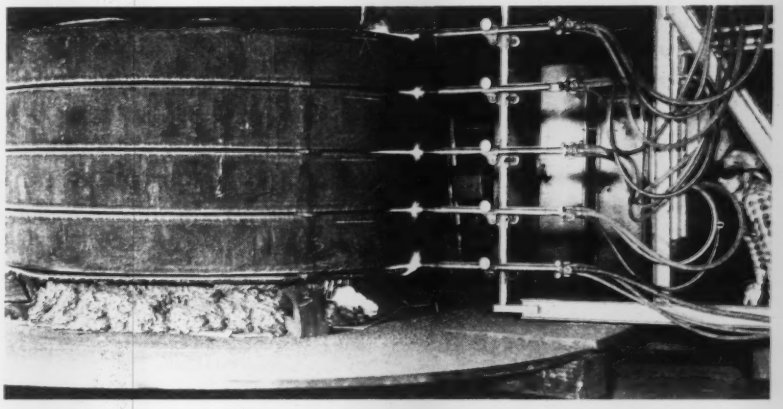
Known materials to be used as surface skins for missiles, satellites, and space vehicles may be observed under high speed solid particle bombardment to determine how they are affected by micrometeorites in space.

Casks Shield Radiation

Large casks of stainless steel buttressed by an 11-in. shield of lead are being used to ship spent fuel elements from atomic reactors.

Developed by Ameray Corp., Kenvil, N. J., they are fabricated with the lead (comprising 85 per cent of the total weight) sandwiched between the stainless. Weight: About 10 tons per cask.

They were cast by Federated Metals Div., American Smelting & Refining Co., New York.



This five torch unit is primarily used to flame-cut multiple ring forgings

Flame Cuts Machining Cost

It speeds up work on forgings, doing the job in about one-third the time formerly consumed. A second, mobile unit is used for other work. Investment is low

FLAME CUTTING permits Midvale Heppenstall Co., Philadelphia, subsidiary of Heppenstall Co., to handle large rough forgings in less than 115 hours that formerly took 320 with conventional machining.

More forgings can be processed with less investment than with large, specialized machine tools.

Flame cutting equipment for this operation at Midvale Heppenstall consists of a large turntable, flame cutting torches, and controls for turntable speed, cutting motion, and flame intensity.

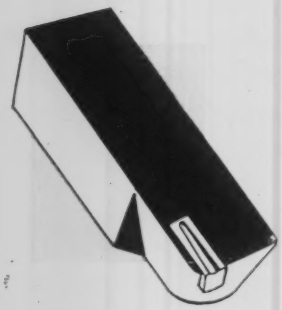
Path Not Restricted—The method is not limited to circular cuts or forgings. Another flame unit used by the company permits tangential and straight line work in any direction without moving the heavy pieces.

By moving the unit to the job, the company saves the expense of a large crane and crew.

Most of the components for the equipment were made in the shops at the plant. Torches were supplied by Linde Co., division of Union Carbide Corp., New York.

Powder Metal Shanks for Cutting Tools Offer:

Reduced Vibrations



High density and hardness dampens the vibrations.

RESULT:

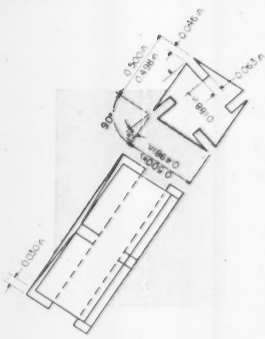
- **Longer tool life.**
- **Better surface finish.**

Complex Tooling

Example: A face mill has eight cutting edges.

RESULT:

- **Lower tool cost.**
- **More time between setups.**



Tool Vibration Is Cut 75%

Shanks for holding carbide cutting tools are made from powdered metals. The low cost parts are accurate and provide a quality surface since they minimize deformation

VIBRATIONS in cutting tools, a principal cause of cutting edge failure, are reduced up to 75 per cent when powdered metal shanks are used to hold carbide cutting elements. Cost is less, tool life is increased, and the surface finish produced is better than with conventional shanks, reports Horace Frommelt, Spring Garden Institute, Philadelphia.

Example: A ¾ by ¾ by 5 in. tool made by powder metallurgy will soon be commercially available. It will cost less than $3, saving at least $5.50 or 65 per cent of the tool cost.

Why Vibration Decreases—When cutting starts, the shank of the tool deforms and sets up vibrations. It is a common practice to add a hard pad (often carbide) which will minimize the deformation.

The powder metal parts work on the same principle. Their density and hardness provide a modulus of elasticity that is three times that of tool steel. This dampens the vibrations caused when the blade enters the cut.

Tests show that when the depth of cut is ⅛ in., the average decrease in vibration is 42 per cent. When the cut is 1/16 in., vibrations drop 75 per cent. Tool life increases 15 per cent and the microinch readings on surface finish decrease 25 per cent.

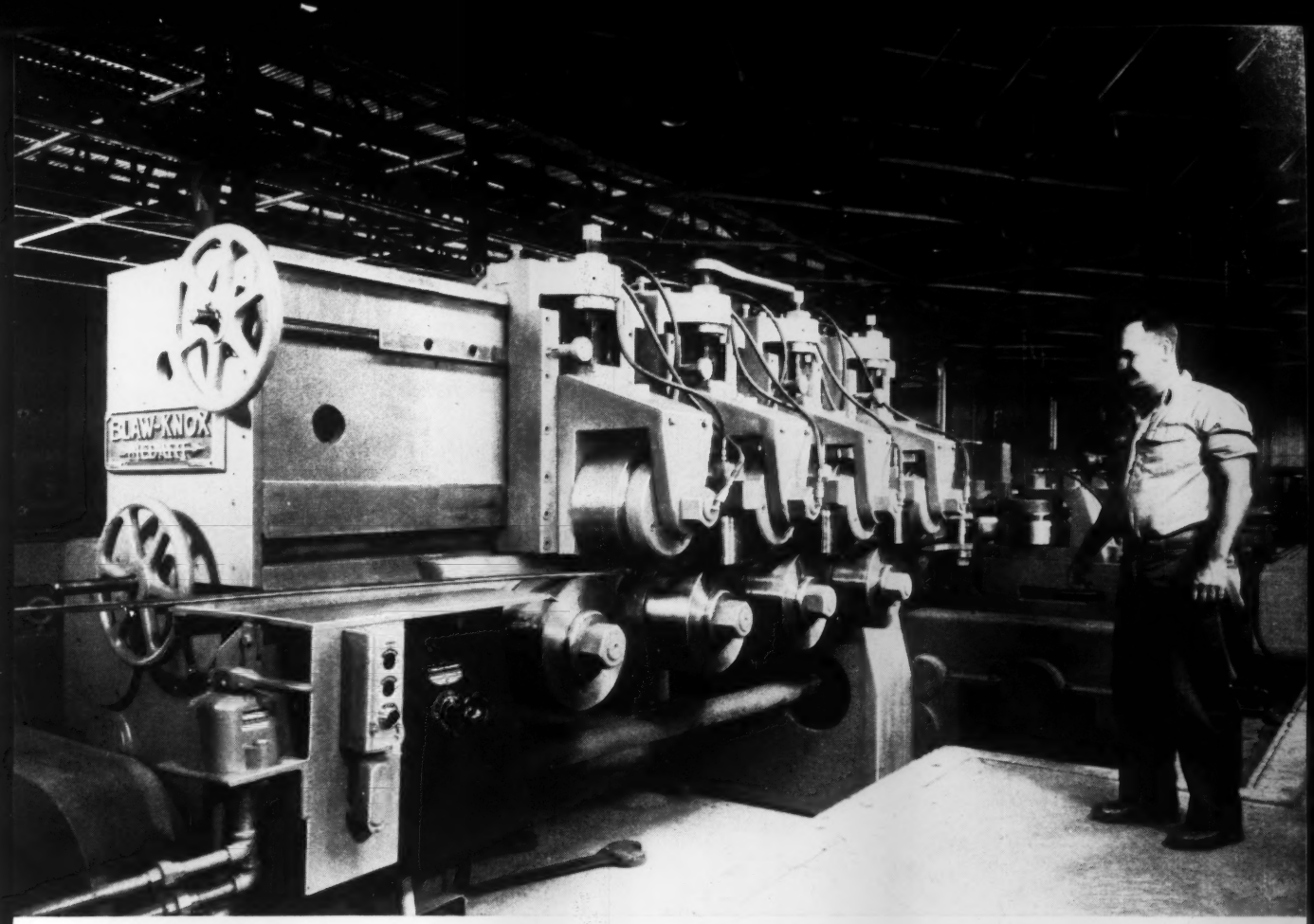
Making Powder Parts—A compact is formed from powders. The carbide is inserted in the slot of the shank (a gentle manual press fit is required).

The assembly is infiltrated with copper. The powder metal mass expands, shrinking the aperture around the carbide, mechanically locking it in place. In addition to the shrinkage pressure, the copper forms a solid solution between the iron and copper at the interface of carbide and metal. The irregularities in the surface of both the shank and the cutting element are filled with copper, helping to lock the carbide rigidly in place.

The cutting elements hold firm against the cutting forces. In tests, a 3-in. diameter face mill was driven by 100 horsepower and the blade was not disrupted or dislodged.

Economy—If parts are made in quantities of 5000 or more, the cost of the powdered part is only a fraction of the cost of a machined steel body. Designs are varied to suit both the limitations of powder metal and the conditions imposed by the cutting field and techniques.

The flexibility of the process is illustrated by a face mill. It is made with a central core of steel. A supporting powder ring with slots holds the indexable inserts. They have eight cutting edges. Indexing takes place four times on each end.



This Blaw-Knox Medart two-plane shape straightener processes cold drawn shapes, squares, flats, hexagonals. Variable bending spans of the 16-rolls of this unit give it a wide range of work piece sizes it will straighten.

There's a BLAW-KNOX High Speed Straightener for every type of shaped cross section

No matter what types of hot rolled bars or extruded shapes you handle—bars, coils or cut lengths or coil to coil—there's a Blaw-Knox Medart Shape Straightener especially designed for the job.

These overhung roll, variable center machines combine the versatility of a variable bending span for both driven and bending rolls with the advantage of a quick roll change. The two plane straightener will handle squares, flats and hexagons without changing rolls in either horizontal or vertical effect.

Single plane machines can be equipped with a side adjustment of the bending rolls to give a two plane straightening effect on the workpiece in the single plane.

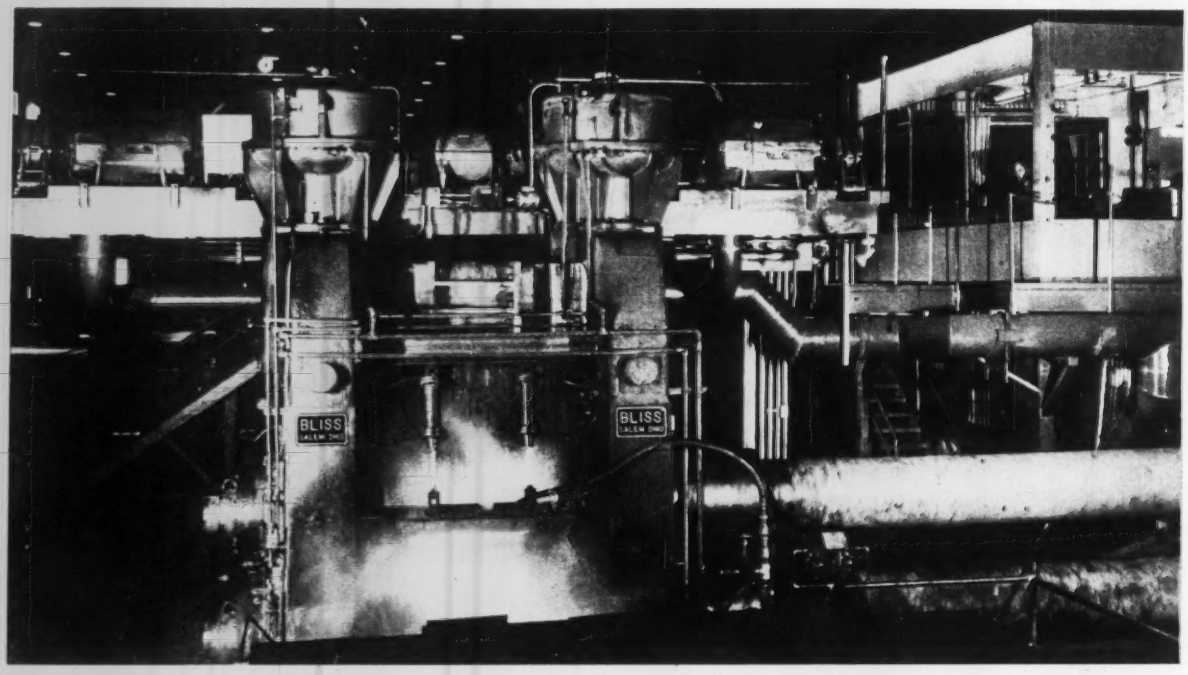
Other types of Blaw-Knox Medart Shape Straighteners for special work include stretchers for bars and continuous coil-to-coil sheet, and roller levellers.

Contact your Blaw-Knox Medart sales engineer for full details and help in the application of the Blaw-Knox Medart Straightener best suited to your operation.

BLAW-KNOX

BLAW-KNOX COMPANY

Foundry and Mill Machinery Division
Blaw-Knox Building • 300 Sixth Avenue
Pittsburgh 22, Pennsylvania



New 2-high intermediate reversing roughing mill is the key unit

Strip Output Doubled

Even efficient mills can be improved. Here's what happened when one company was convinced more could be done by adding three new units

STEEL plant management is taking a closer look at production efficiency.

Even the continuous strip mills are getting their share of attention.

Take the Empire-Reeves Div., Universal - Cyclops Steel Corp., Mansfield, Ohio. E. W. Bliss modified that firm's continuous strip line only six years ago; it recently revamped the layout again.

The result: Production was doubled. Here's why: A reversing intermediate roughing stand does some of the reduction formerly handled almost exclusively by the slabbing-blooming mill.

Old Setup—The old line started with the reversing slabbing-blooming mill, followed by edging rolls, crop shear, intermediate one-pass roughing stand, a 4-stand tandem finishing train of 4-high mills, a runout table, and upcoiler. It rolled 4 to 5 ton ingots at the rate of 15 an hour.

The rolling cycle included 17 to 21 passes through the slabbing mill which reduced 18-in. ingots to about 7/8 in. After end cropping, slabs were passed through a one-way intermediate rougher which reduced them to ½ in. in one heavy pass. (It was a low powered, 3 high style used as a single pass mill.) As slabs continued through the finishing train, they emerged from the No. 4 stand in thicknesses down to 0.080 in.

How It's Done Now—The new line rolls 30 ingots an hour. The key unit is the new intermediate reversing roughing stand which takes much of the load off the slabbing mill. A flying shear and downcoiler have been added to handle the added capacity.

Here's the rundown: 1. The slabbing mill reduces 18-in. ingots to 5 in. in 11 to 18 passes. 2. Ends are cropped. 3. Seven passes through the Bliss intermediate roughing mill pull the 5-in. slabs down to 0.050 in. 4. Ends are cropped in the new upcut (flying shear) to eliminate fishtails in the No. 1 stand of the finishing train. 5. Finished strip passes to the runout table and the new downcoiler.

Controls — Speed of the intermediate rougher depends on an automated control. Westinghouse-Prodac and IBM Recordak devices are set by punch cards made in advance for each grade and gage to be rolled.

The operator inserts a card in the console at the start of each heat. As the slab approaches from the crop shear at the end of the slabbing mill, the operator pushes a button for the first and each succeeding pass. Rolls and mill speeds are set automatically.

Light gage strip is produced in a straight line without reheat.

Shearing* LINES

Designed and Built by MESTA

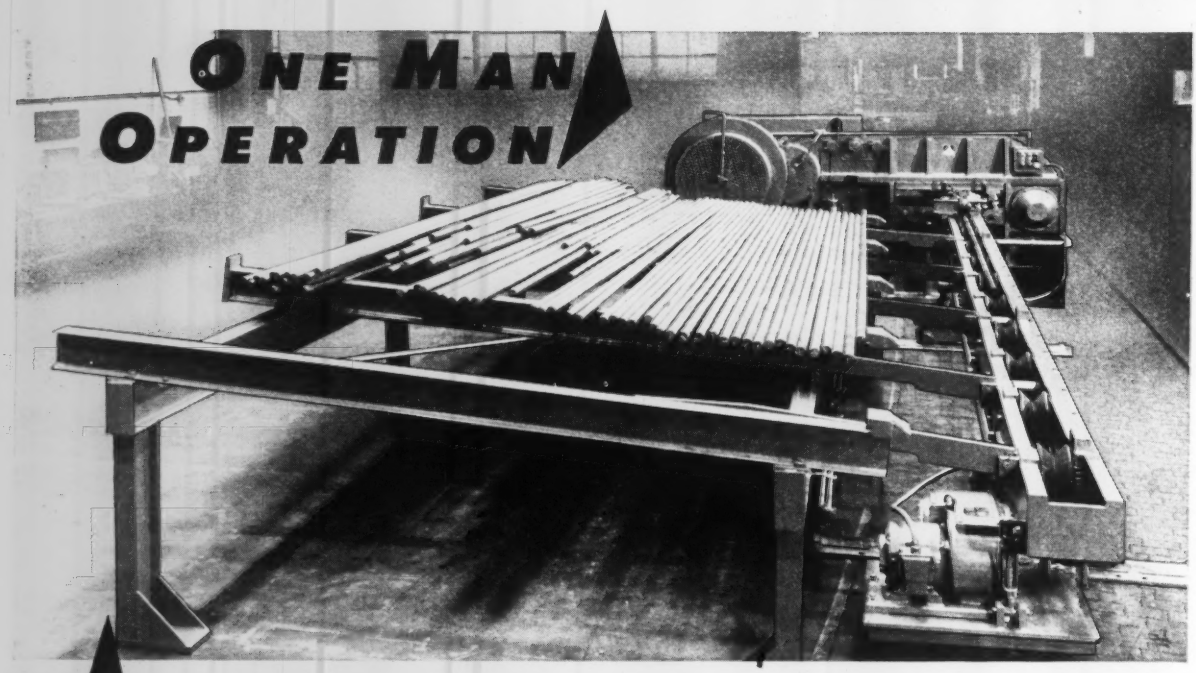
Mesta 60" Sheet Shearing Lines with Trimmers and Combination Rotary Flying Shears and Levellers Operating at McLouth Steel Corporation, Gibraltar, Michigan

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

MESTA
THERE IS NONE BETTER

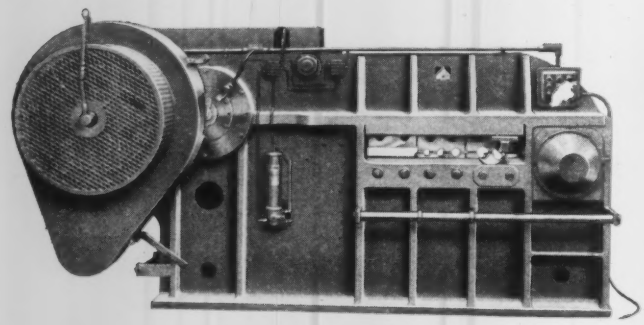


Production cutting of bar stock on a ***HILL ACME*** *Bar-Billet Shear with auxiliary automatic feed*

The nearest thing to automation achieved so far in the production cutting of bar stock is the HILL ACME BAR-BILLET shear with auxiliary automatic feed. With one man as standby observer, bars are fed automatically from the rack to the roll feed mechanism. Automatic stops on the billet shear predetermine the length of cut.

On ideal installations bars travel from steel storage on conveyors through the billet shear to tote boxes without being touched by hand.

HILL ACME BAR-BILLET shears have proven to be the most efficient, economical and trouble-free units on the market today. With the exclusive outboard support on the drop-off side, square, accurate cuts are assured. These high production shears are built in a variety of sizes to meet every cutting need up to 9″ in rounds. A new bulletin covering all details of construction and operation is now available.



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1201 West 65th St., Cleveland 2, Ohio

Heaters Lower Costs

Better working conditions and high maintenance expenses are benefits, firm reports

CONVERSION to electric immersion heaters in a molten salt bath has brought a double advantage to Chain Belt Co., Springfield, Mass. It has eliminated discomfort to personnel and reduced maintenance expenses.

A blue, gun-barrel type finish is applied to parts as they are conveyed through the molten salt at an operating temperature of 700° F. Work is poured continuously into a conveyor belt and is discharged from the bath into two successive rinse tanks. Up to 800 lb an hour can be handled.

Originally, heat was applied in a large brick chamber under the steel tank. Burners entered from the side, and the high temperature flame threw excessive heat in the immediate vicinity of the tank. Now the heat loss is only from the bath surface and some from the sides.

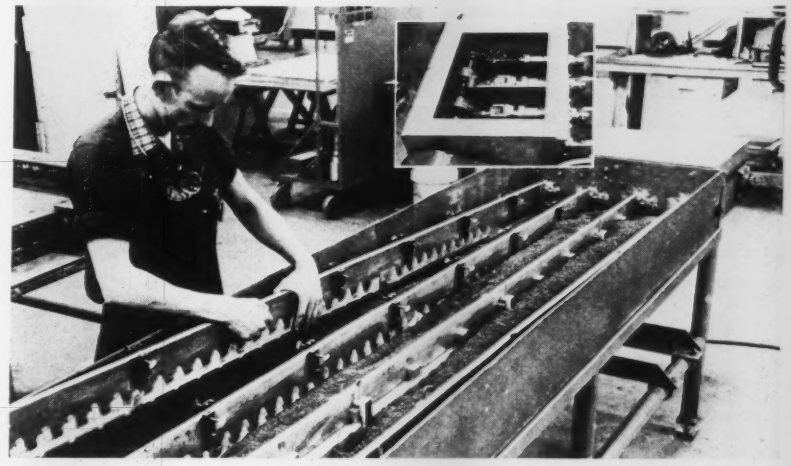
Costs Reduced—Two maintenance items have been eliminated: The firebrick lining of the combustion chamber no longer needs periodic renewing—a material and labor cost of $1000, and tanks ($400 each) no longer need to be replaced because of burnout. (They used to burn out about every two years.)

Thermostatic control is in two stages. A drop from preset temperature energizes six of 15 heaters. A drop to 21° F below preset, brings on the remaining nine. The action is reversed for a rise in temperature. This arrangement provides more uniform temperature control and better performance with broader load distribution.

Heater operation is initiated at 3 a.m. by a time clock. By 5:30 a.m. the bath has reached 300° F. Operation is then automatically placed under the control of a thermostat which has been preset to a maximum operating temperature of 700° F.

The electric heat source consists of over the side, L-shaped Chromalox stainless steel sheathed heaters —Type TBL-6001A of 480 volts, 6 kw each.

Electricity costs are about the same as previous fuel costs.



An operator loads aluminum spar caps on shaker bars. Six minutes later the long parts will be deburred and polished. This close-up shows the eccentric cams that are rotated to vibrate the shaker rods

Deburring Problem Solved

VIBRATION DEBURRING is used at Convair, a division of General Dynamics Corp., Ft. Worth, Tex. It might help you lick your cost problems.

Equipment used is simple and economical to build and maintain. It consists of a welded tank, supported by a welded pipe understructure. The tank is 10 in. deep, 30 in. wide, and 12½ ft long.

Construction — Three bearing blocks are welded to the outside of one end of the tank to support the drive mechanism—a 1½ in. diameter shaft. Four eccentric radial bearings, with 3/16-in. off-center bore, are keyed to the shaft.

The eccentric rod, on the outer case of the eccentric bearing, is connected by a pivot joint to a push rod that extends inside the tank through a bronze bushing.

Four bars (on which parts are clamped during deburring) extend the full length of the tank and are connected to the push rod. The opposite ends are supported by brackets inside the tank.

The driveshaft is driven at 1425 rpm by a 5-hp electric motor, generating reciprocating motion of the shaker bar.

About 4 in. of No. 6 abrasive grit are in the tank. The surface of the part to be deburred is submerged in the grit. Smaller grit was tried, but action was much slower, requiring more time to obtain the desired results. Larger grit worked faster, but metal particles removed from the part tended to stick to the abrasive, soon nullifying the abrasive action.

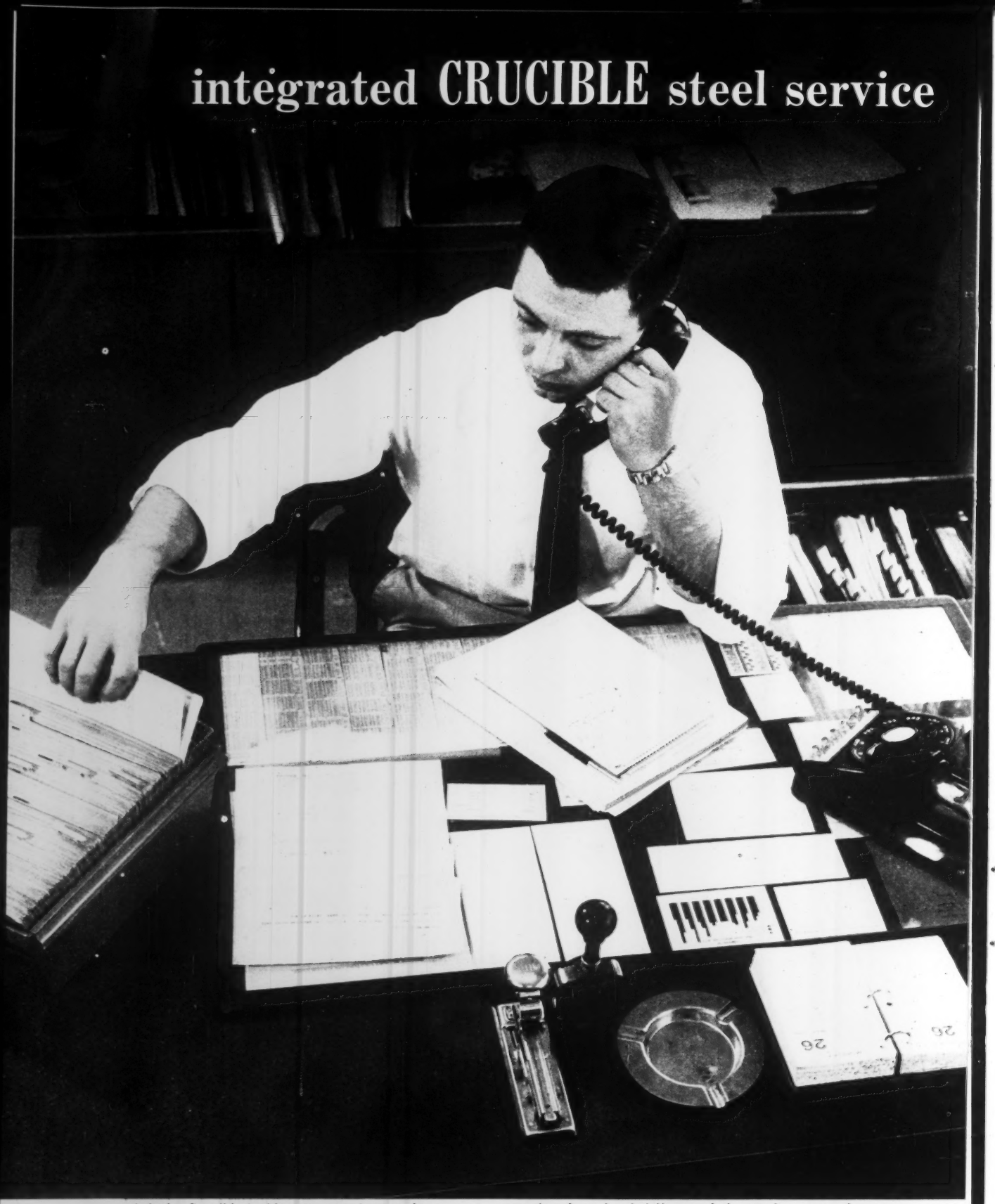
The only material deburred at Convair is aluminum 7075-T6. However, company officials think similar results could be obtained on other materials by varying time and possibly abrasive size.

The amount of metal removed is controlled by cycle length. Flat surfaces being deburred are polished slightly. More severe abrasion takes place along edges and corners, resulting in a well-deburred part without loss of tolerance.

About 6 minutes is required to deburr spars. This is sufficient time to remove all sharp edges and burrs and to improve appearance by polishing.

Vibration deburring is best suited for long slender parts such as spars and stringers. It's not as satisfactory for small parts in large lots because of the time involved in loading and unloading.

integrated CRUCIBLE steel service



Ask the Crucible inside account salesman for a run-down on all the services his warehouse offers. He's your contact with completely integrated services ranging from local delivery of the steels you need to metal research.

makes available a local

4-POINT SPECIALTY STEEL SERVICE

to both large and small users

All 27 warehouses offer
(1) simplified ordering
(2) in-stock deliveries
(3) metalworking assistance
(4) metal research

Each Crucible warehouse is a *specialty steel service center* – stocked, staffed and equipped to give you a wide range of services.

Here's what the warehouse near you can offer –

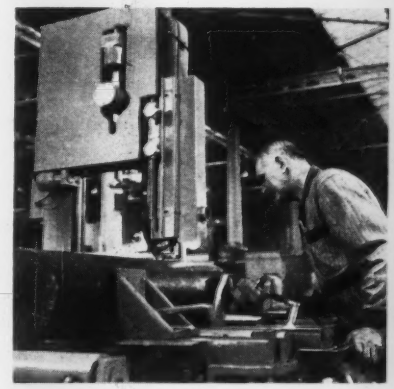
(1) *Simplified Ordering.* The inside account salesman assigned to you expedites all your orders, arranges for extra services and speeds up shipments when necessary. His personal responsibility means convenient ordering, no delays, no mistakes, nor misunderstandings.

(2) *In-stock delivery* of 16,000 specialty steel items, cut or processed to your specifications. Because warehouses maintain these stocks at high levels, you're sure of getting immediate delivery.

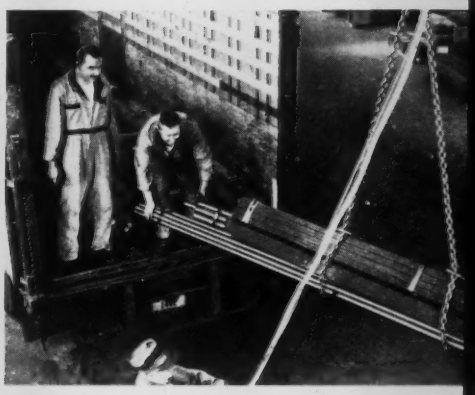
(3) *Metalworking assistance.* Experienced service engineers will work with your engineers to solve machining, heat treating or any other metalworking problem.

(4) *Metal research.* Crucible metallurgists visit local warehouses regularly. They'll bring the benefits of Crucible's experience and continuing research to your plant, too.

This service in depth is available because the Crucible operation is completely integrated from ore to steelmaking to warehouse delivery to you. But get full details. Ask the Crucible salesman to list all the services his warehouse offers. *Crucible Steel Company of America, Dept. PJ15, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*



To speed up cutting on your orders, warehouses are now equipped with the latest hacksaws, and continuous-cutting and self-aligning bandsaws.



Average local warehouse continually replenishes stocks of 16,000 specialty steel items—gives you overnight delivery on almost all.

Sales-service engineers — who specialize in tool steels, stainless, alloys— will gladly help you with any type of metalworking problem.

STOCK LIST
Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All These Steels

TOOL STEELS–Water, oil, air hardening, shock resisting, hot work, plastic and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stocks

HIGH SPEED STEELS–Crucible's famous "Rex"® steels. Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits

STAINLESS STEELS – Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles

FREE MACHINING STEELS – Crucible Max-el® rounds, hexagons, plates and brake die steel

ALLOY STEELS – Bars, billets, strip and sheet

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS – Hollow and solid drill steels

ALUMINUM EXTRUSION DIE STEELS

HOLLOW TOOL STEEL

WELDING AND HARD FACING ROD

PLASTIC MOLD STEELS

PERMANENT MAGNETS

— and many others

CRUCIBLE STEEL COMPANY OF AMERICA

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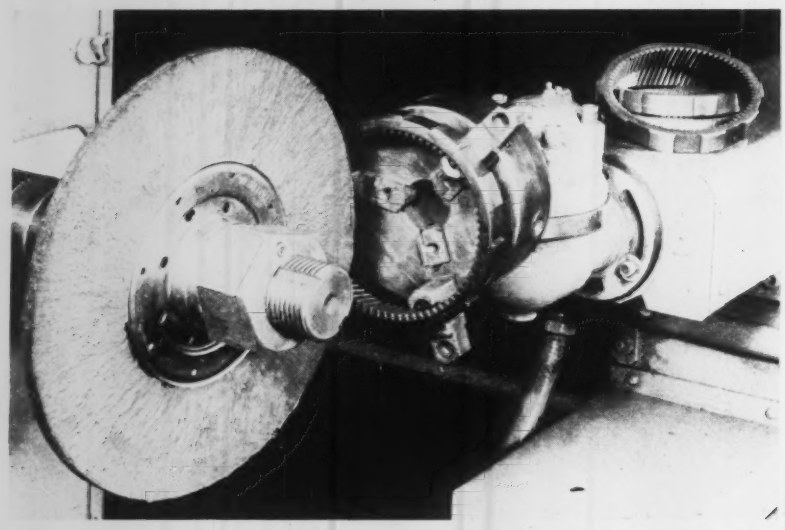


This setup uses a "Ty" wheel for deburring and blending the edges of teeth on internal gears. Bonding material holds wires tightly for more accurate results

Design Upgrades Brushes

A NEW brush that resembles a grinding wheel promises to greatly extend the usefulness of power brushing.

Called a "Ty" tool, it's a standard wire brush bonded with an elastomer (plastic). Osborn Mfg. Co., Cleveland, lists these advantages over unbonded types:

- Stronger brushing action.
- Longer life.
- Less wire breakage.
- Better control of brush contact area.

New Uses—The bonded version is not a strict replacement for standard brushes. Its effects on metals are between those of brushes and abrasives. Prime application targets are the jobs done by rotary files, abrasive stones or belts, tumbling, and shotblasting; for example, part finishing, burr and flash removal, contour blending, and surface preparation.

During brushing experiments, the Osborn people found that they could use much harder wire than is customary for nonbonded wheels. That increased the work rate while reducing work pressure. The bonding material also severely limits flexibility, further increasing the strength of brushing. Face wear is even and loading is reduced.

Special Application—One of the types has a wavy face for stripping wire. Wheels are mounted in an over-under power fixture and the wire fed between them. Spacing is adjusted to permit fast insulation removal and leave a slightly scratched surface to aid tinning and speed solder flow.

Production data show that brush life averages from four to five times longer than wheel type strippers. They will handle #44 AWG insulated leads and multiple strand wires. (The size of the wire in the wheel is varied to fit the wire being stripped.)

Brush speeds range from 1725 to 3750 rpm and are equally effective with automatic or manually operated equipment.

Cellular Ceramics

Their lightness, strength, and resistance to high temperature suggest many applications

THIN-WALLED ceramics formed into lightweight honeycomb structures can withstand temperatures up to 1800° F with virtually no thermal expansion, says Corning Glass Works, Corning, N. Y.

Called Cercor structures, the ceramics can operate continuously at 1290° F. At both temperatures, the materials are resistant to oxidation and corrosion and can stand extreme thermal shock.

Applications — "The extremely low expansion at high temperatures and high surface area of Cercor process materials indicate their future use in gaseous heat exchangers, as catalyst supports, and as structural materials for use at elevated temperatures," states John B. Ward, general manager of Corning's New Products Div.

The structures can also be used as air preheaters and aftercoolers, as burner plates or covers, column packing material, or as architectural materials.

Shapes Possible—It is possible to build Cercor structures in a wide range of shapes and properties. The base material can be any of a large number of ceramic compositions.

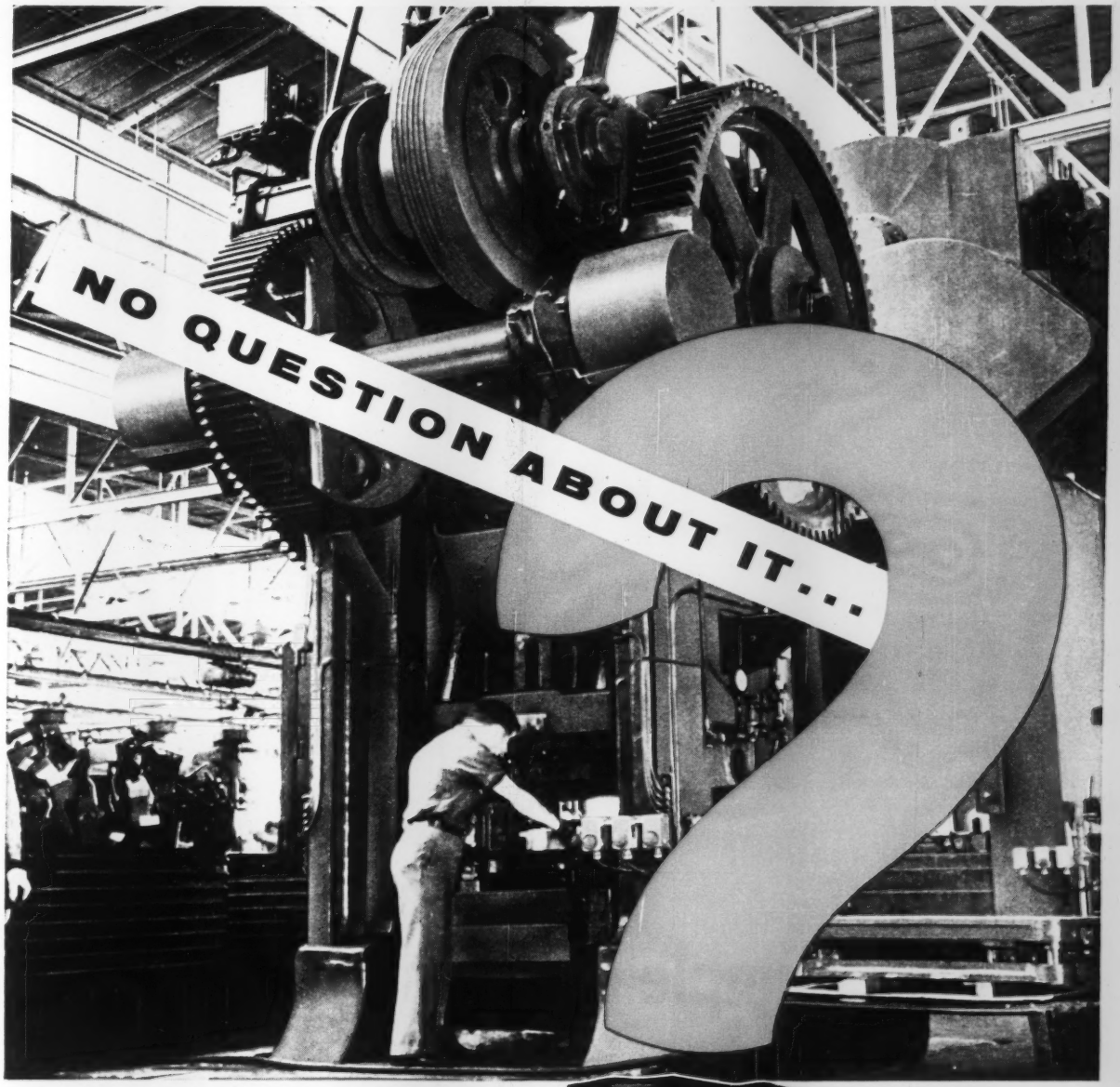
Pyroceram, high strength crystalline material developed by Corning, is used as one of the base materials for available Cercor pieces.

Discs 20 in. in diameter and 3¾ in. thick have been made. A protective rim for the disc is formed by a tough coating of special material with matching expansion and high resistance to temperature.

The rim can be applied to all sizes of Cercor pieces to protect the thin-edged walls against excessive outside stresses. It can also be used as a convenient mounting support.

Properties — Available Cercor pieces have a compressive strength, parallel to channels, of 2000 psi. Surface area of the 20-hole-per-inch corrugated structure is 1500 sq ft per cubic foot of material.

Of the total face area, 75 to 80 per cent is open space. The material has a density of about 30 lb per cubic foot, and a specific heat (room temperature) of 0.20. Average wall thickness is 0.005 in.



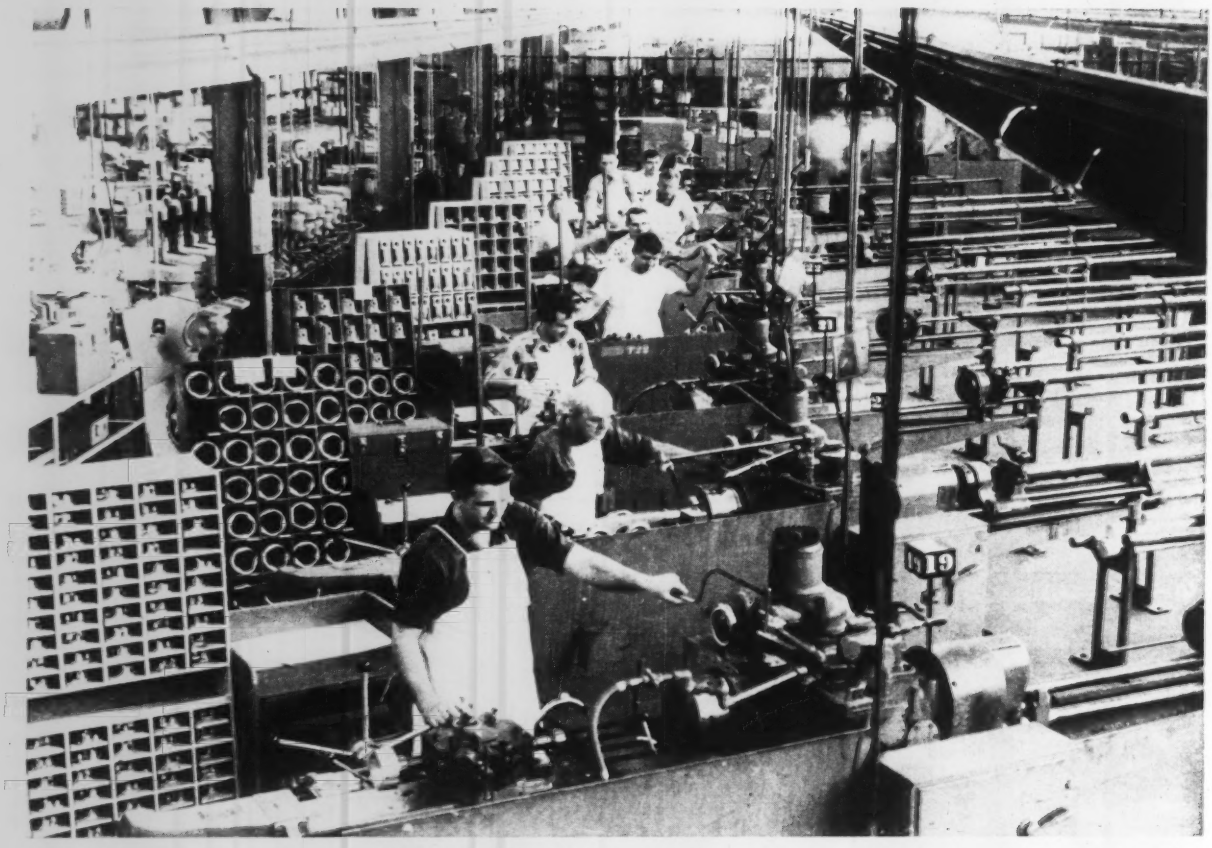
Bituminous is the dependable fuel for B&O *plant power*

- Is it readily available?—*Yes, it's yours on order!*
- Is there enough for any future need?—*Sure thing, the supply is practically limitless!*
- How about present and future cost?—*Price is stabilized by expanding mine mechanization and increasing efficiency of modern burning equipment.*

B&O

BITUMINOUS COALS FOR EVERY PURPOSE

Ask our man! BALTIMORE & OHIO RAILROAD, BALTIMORE 1, MD., Phone: LExington 9-0400



Machinists take parts from egg crate racks in numerical sequence. After machining, operator checks dimensions, stamps gaging list (opposite), and lists defects

Here's a Simple Quality Plan

Keyman in system is machinist. His checks become the basis for statistical analysis. Production and quality people also benefit, says west coast aircraft firm

A SYSTEM developed by Parker Aircraft Co., Los Angeles, solves many of the quality problems peculiar to short runs of machined parts.

With it, you can quickly spot and report sources of error to tool engineers and other groups for corrective action.

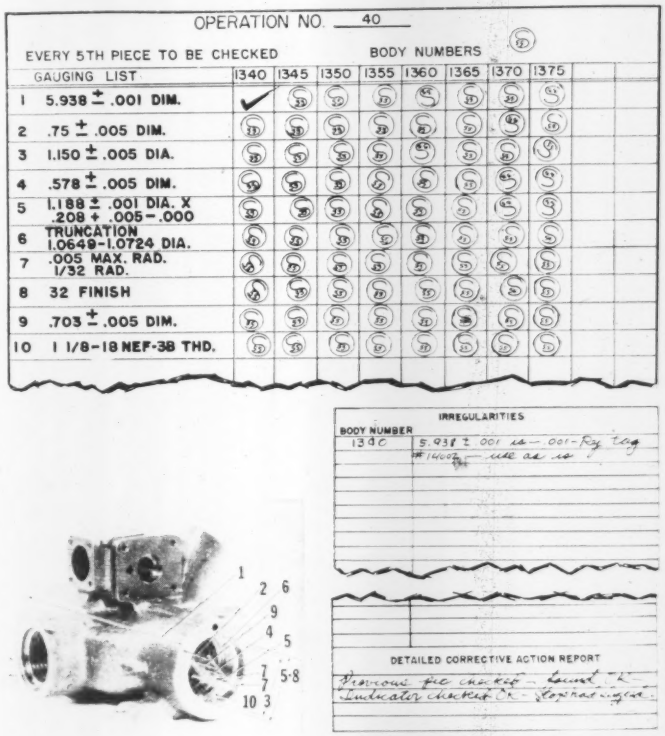
William R. Baker, director of quality control, pointed out these advantages at a meeting of the American Society of Tool Engineers in Los Angeles:

- The system has practically eliminated profit losses due to rejections. (One customer's rejection rate dropped 90 per cent.)
- Final inspection has been eliminated and the amount of on-the-job inspection substantially reduced.
- No expensive equipment or extensive reorganization is necessary.
- More accurate data on tool wear and machine capabilities are available.

Keyman—Parker calls its system the "egg crate." The machine operator does most of the checking. Since he already runs a continuous check on his own work, the additional time to do a more thorough job isn't burdensome.

The "egg crate" is a rack which holds all parts for machining. When ready, they are delivered to the machinist in the crate. After each one is machined, it is returned to its own cell where it is kept throughout processing.

Progressive sampling by machine operators is combined with random sampling by inspectors. Checking


OPERATION NO. 40
EVERY 5TH PIECE TO BE CHECKED
BODY NUMBERS
GAUGING LIST
1340 1345 1350 1355 1360 1365 1370 1375
1 5.938 ± .001 DIM.
2 .75 ± .005 DIM.
3 1.150 ± .005 DIA.
4 .578 ± .005 DIM.
5 1.188 ± .001 DIA. X .208 + .005 − .000
6 TRUNCATION 1.0648-1.0724 DIA.
7 .005 MAX. RAD. 1/32 RAD.
8 32 FINISH
9 .703 ± .005 DIM.
10 1 1/8-18 NEF-38 THD.
IRREGULARITIES
BODY NUMBER
1340
DETAILED CORRECTIVE ACTION REPORT

Gaging list shows checks to be made. Stamp certifies part O.K.; a check mark indicates reject. Irregularities are listed on the back

frequency is determined by the quality control director who uses standard statistical procedures.

Procedure—Rough bodies of hydraulic valves, for example, are inspected on arrival. After chemical and physical analyses of the parts, they are ready for machining. Each one is numbered and placed in a rack. (Numbers are also entered on the purchase order for reference.) A gaging list and the latest engineering, routing, and process drawings are also attached.

The gaging list gives the inspection department an accurate progress and condition report. It shows which dimensions must be checked.

Part numbers are listed across the top. (Every fifth piece is inspected.) Entries in the left column show the dimension to be checked. When a valve body meets all requirements, the operator stamps the proper square. If it's not up to specs, he simply enters a check mark.

When finding such a part, the machinist checks all parts made since the last inspection (there are four). That eliminates having to go over a whole batch.

Rejects Stay In — Off-standard parts are reworked as soon as possible. Scrap parts are painted red and replaced in the rack. The condition of the part and its number are recorded on the back of the gaging list.

Leaving rejected parts in the egg crate rack serves several functions:

1. The machinist can see how well he is doing.
2. The foreman can quickly determine which operator and machine are having the most trouble with rejects.
3. A production planner can estimate more accurately how many acceptable parts will be in a completed batch.
4. It simplifies the calculation of reject percentages by quality control people.
5. It pinpoints assignable causes for an action committee. (The one at Parker has representatives from quality control, production, and process and design engineering.)

Random Inspection — Floor inspectors also check parts along the line. They are responsible for keeping the right gaging lists and corrective action reports. When machining is finished, they review the gaging lists and rejects. Scrap parts are removed from the rack and the remaining parts looked over for handling damage.

Answers Objections—Parker officials say this is the complaint they hear most often: Since checking is done on the line, an operator can't turn out as much work as he did before.

Such arguments simply aren't valid in the light of Parker's experience. Many examples prove that production goes up, not down—mainly due (it says) to fewer rejections.

Furthermore, a machine seldom stops. Inspection goes on while the machine is working. With fewer rejects to worry him, a machinist spends his time making more acceptable parts.

Parker does have one word of caution: Get the best inspection tools and the simplest checking devices for machinists. They are indispensable in keeping his inspection time at a minimum.

No Union Complaints — The Parker system has also been endorsed by the union in its Cleveland and Los Angeles plants. In both cases acceptance was due largely to the manner in which the program was presented.

The system does not require any upgrading, company officials find. Job descriptions clearly state that each operator must work to exceptionally fine tolerances. To qualify, he must be able to check his own work with standard checking equipment.

Occasionally, a job does need retiming. Short runs at the Los Angeles plant are not on standard work rates, but the Cleveland division operates the other way, so a time allowance has been included. Inspection people make sure the checks are being made.

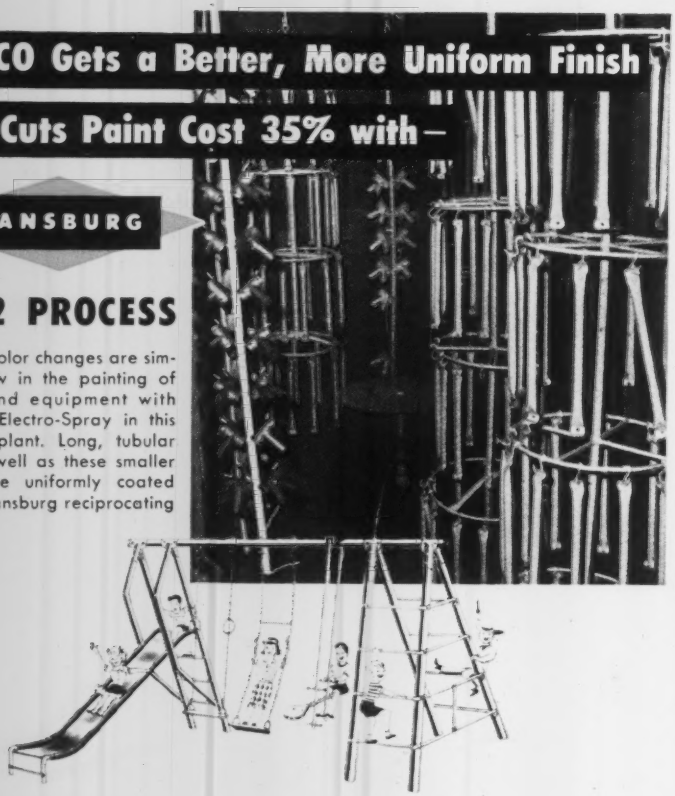
Each machinist gets the same training as quality control people. He must be convinced that his checking is the most vital operation in producing quality.

TURCO Gets a Better, More Uniform Finish And Cuts Paint Cost 35% with—

RANSBURG

NO. 2 PROCESS

Frequent color changes are simplified now in the painting of playground equipment with Ransburg Electro-Spray in this St. Louis plant. Long, tubular parts, as well as these smaller pieces, are uniformly coated with the Ransburg reciprocating disk.



QUALITY IMPROVEMENT! That was Turco Manufacturing's chief reason for changing from flo-coat to electrostatic spray painting of their quality line of playground equipment.

Not only is Ransburg No. 2 Process providing a higher quality, uniform coating on all parts, but Turco is saving 35% in paint cost!

Simplicity in color change with Electro-Spray is another important advantage here. With Turco's production methods, colors are changed 15 times in an 8-hour shift. Now, changes are made on the fly with no down-time. By contrast, the former "stop and go" method would mean over an hour's lost time in a day's operation.

NO REASON WHY YOU CAN'T DO IT TOO!

Whatever your product, if it's painted, we'd like to tell you more about the worthwhile savings and benefits which can be yours with RANSBURG ELECTROSTATIC PAINTING PROCESSES. Write for our No. 2 Process brochure which cites many examples of electrostatic spray painting on a wide variety of products.

Call or write

RANSBURG
Electro-Coating Corp.
P.O. Box 7822, Indianapolis 23, Ind.

Detects Overheating

Continuous strips attached to equipment cause alarm to ring when unit gets too hot

A UNIQUE overheat-fire detector, long used in airplane engine applications, is proving its worth in industry, says Walter Kidde & Co. Inc., New York.

The continuous strip systems give an early warning of overheating for a multitude of production processes.

They are being used for temperature control of heat treating equipment, regenerative air heaters in power generating systems, atomic combustors, liquid oxygen storage facilities, and similar processes.

How They're Made—The strips come in variable lengths (up to 20 ft) and are coupled together to form longer strands. They are of flexible Inconel tubing which contains two wires imbedded in a ceramic, thermistor core.

The tubing is attached to the surface of the equipment to be protected. Spacing of the strands and the patterns of applications are subject to the degree of overheat coverage desired and the shape of the equipment.

How They Operate—Normally, less than 10 volts (alternating or direct current) is applied to the circuit. At normal operating temperatures, the ceramic offers high resistance to the flow of current between the two conductors. When the temperature exceeds a set point, the resistance of the ceramic drops rapidly and permits an increased flow of current between the two wires.

When a predetermined resistance is reached, the monitoring control unit causes an alarm to sound. When the temperature returns to normal, the high resistance of the ceramic is restored, and the alarm shuts off.

Continuous strip overheat detectors have an alarm range of 200 to 1000° F. The strips can be subjected to temperatures as low as −65° F.

Other Applications—The equipment can be adapted to detect dangerous temperatures above and/or below a normal temperature range.

Ultrasonic Unit Machines at 25,000 Strokes a Second

The Model No. 200-B2 Cavitron handles production or experimental machining of hard brittle materials with accuracy and economy.

Its effective machining area is 1/64 to ½ in. with solid tool design. An area to 1 in. is used for shallow work.

Operations include cutting, drilling, engraving, slicing, dicing, and the production of complex shapes and forms. Materials worked: Germanium, ceramics, silicon, ferrite, hardened steel, and carbide.

Vertical tool adjustment is 2 in., dial indicated. Fine feed manual control or infinitely adjustable gravity control feeds the tool into the work. An indicating light constantly monitors cutting conditions.

A magnetostrictive transducer provides up to 25,000 machining strokes a second, the precision machine unit has 8 in. longitudinal and 6 in. traverse table travel with handwheels graduated in 0.001 in. increments. *Write*: Sheffield Corp., subsidiary of Bendix Aviation Corp., Dayton 1, Ohio. *Phone*: Clearwater 4-5277

Gage Measures and Rejects Steel Sheets Automatically

A control device automatically measures the length of steel sheets moving along a conveyor belt at high speeds and rejects short or long pieces.

The device is also adaptable to nonferrous metals or other material fabrication processes.

When an out of tolerance sheet is measured, the control unit produces an output signal that actuates an alarm and operates an automatic reject system.

The unit is rated for continuous operation, and accuracy of the system is ± 0.003 in.—independent of conveyor speed. *Write*: Eldorado Electronics, 2821 Tenth St., Berkeley 10, Calif. *Phone*: Thornwall 1-4613

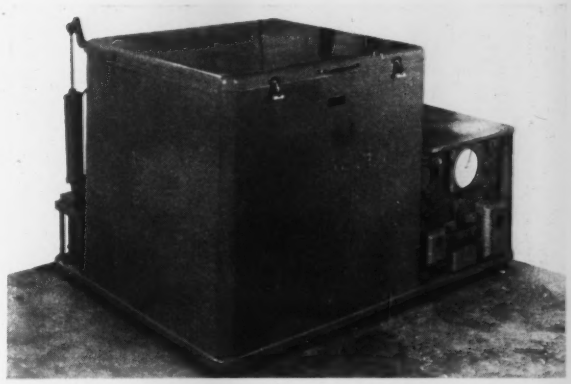
Low Temperature Unit Stabilizes Stainless Steel

This industrial low temperature device can cool 350 lb of AM-350 stainless steel per hour from +80° to −120° F.

The 4SR-120-64 unit is for aging stainless steels used in aircraft and missiles. It is also suited for any type of production chilling.

The built-in system of temperature adjustment and the quick pulldown from ambient offer the speed and range to handle the latest types of steel with maximum efficiency.

The 64 cu ft chamber has a net thermal capacity of about 8500 Btu an hour at − 120° F. Mechanical air convection in the chamber facilitates chilling. *Write*: Cincinnati Sub-Zero Products, 3932 Reading Rd., Cincinnati 29, Ohio. *Phone*: Plaza 1-8810



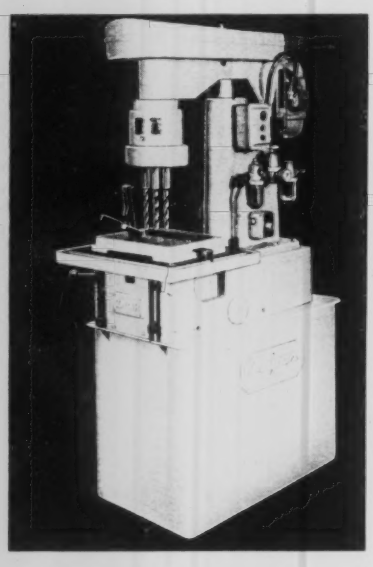
NEW PRODUCTS and equipment

Machine Drills and Taps

The thrust capacity of this 22 in., air-oil feed drilling machine is 2000 lb with compressed air at 80 psi.

Controlled or slow-feed ram movement can be adjusted 0 to 6 in. Adjustable stops can be set to use any total length of stroke desired. The only control needed is a switch to operate the motor.

The machine base contains all components, piping, and control



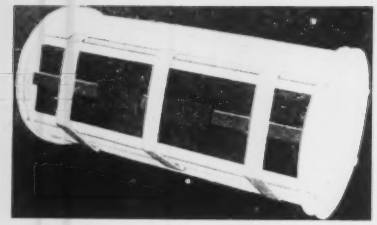
linkage necessary for operation. *Write*: Zagar Inc., 24000 Lakeland Blvd., Cleveland 23, Ohio. *Phone*: Redwood 1-0500

Cylinder Cuts Downtime

This plating cylinder has trussed rib, all bolted construction for 275-lb loads; high performance (temperatures to 220° F, bussed for 1420 amperes, through-cycle); and simplified maintenance.

It is recommended for acids, alkalies, electrolytic alkaline descaling, all plating solutions, and other surface treatments.

Corresponding parts in Plexiglas, Polydur, and Tempron are interchangeable, and cylinders can be assembled in all three materials, or in any combination. The units are available in models to fit all belt or gear drives and all makes, types, and sizes. *Write*: G. S. Equipment



Co., 15585 Brookpark Rd., Cleveland, Ohio. *Phone*: Clearwater 2-4774

Lube Imparts Tough Film

Molylube 110-L, an extreme pressure lubricant, is a solvent refined petroleum oil containing a stable dispersion of molybdenum disulfide.

It provides a tough film capable of withstanding shock loads and wiping action, contains additives for rust prevention, and has high lubricity and polar affinity for metal surfaces.

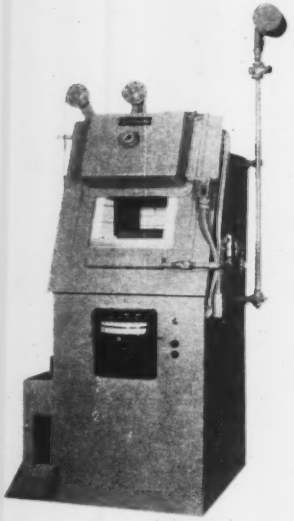
It will prevent seizing and galling at bearing pressures well over 100,000 psi. *Write*: Bel-Ray Co. Inc., Green Village Road, Madison, N. J. *Phone*: Frontier 7-1110

Furnace Is Compact

This packaged atmosphere box furnace is for continuous operation at all heat levels up to 2000° F.

The chamber is protected by an automatic flame curtain which ignites when the door begins to open. Chamber dimensions: 8 in. wide, 13 in. deep, and 5 in. high.

All electrical components and controls are mounted in the furnace

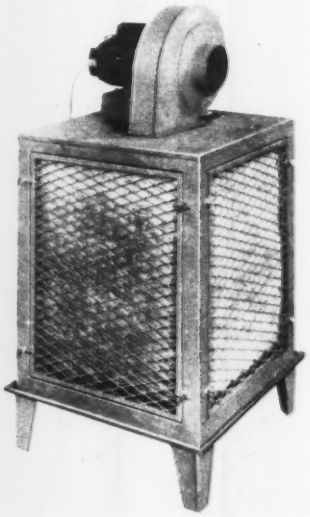


base and completely prewired and piped. *Write*: Pilot Plant Div., Lindberg Engineering Co., 2444 W. Hubbard St., Chicago 12, Ill. *Phone*: Monroe 6-3443

Unit Collects Mist

The compact MC-412 collector controls mists from wet machining operations that can endanger employee health or create fire and safety hazards.

The machine requires no high



voltage electronic equipment; it filters by passing air through spun glass units that can be economically replaced.

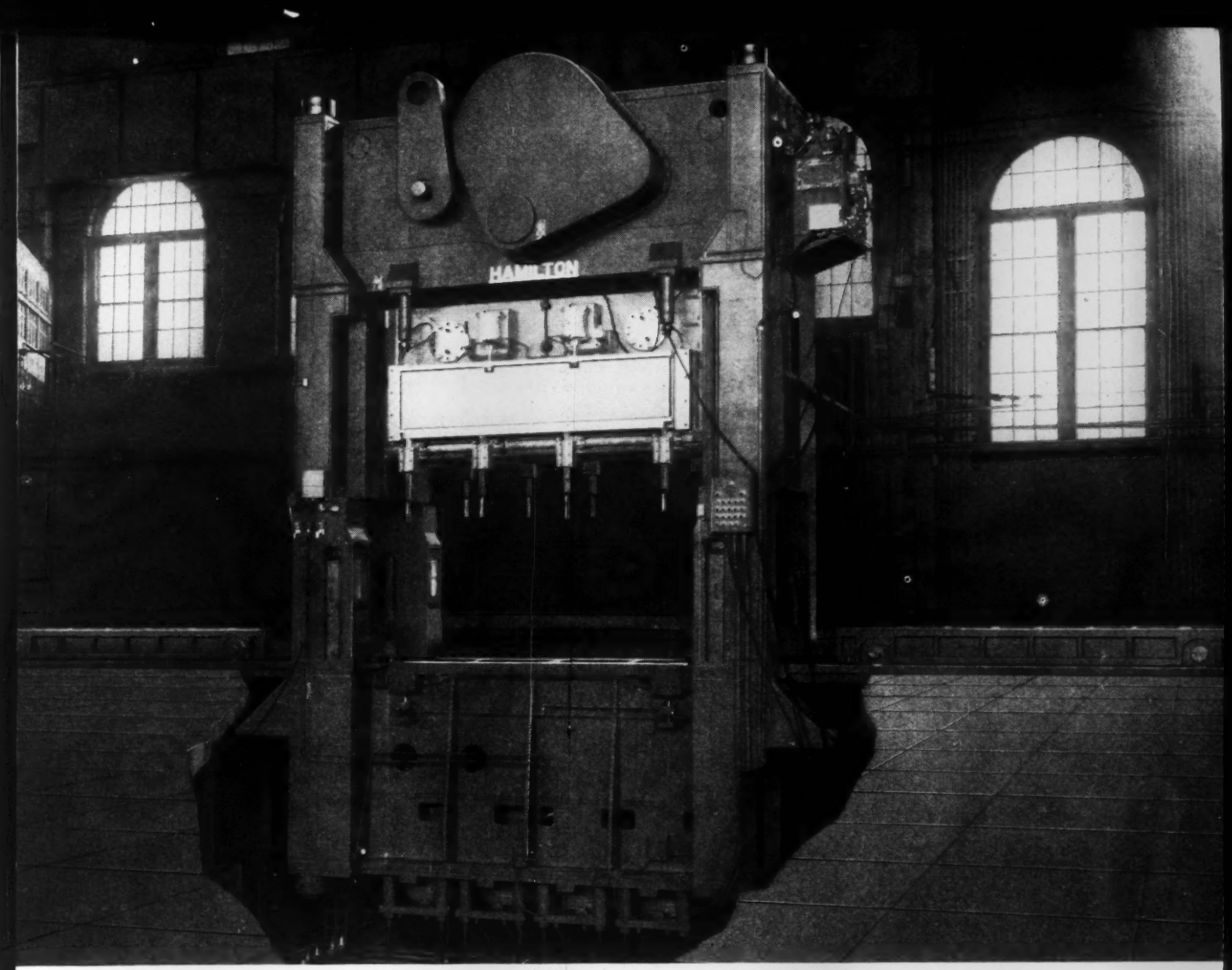
The condensed coolant is collected for re-use, and the unit can be connected to a machine system for continuous flow. *Write*: Torit Mfg. Co., St. Paul 2, Minn. *Phone*: Capitol 2-4419

Converts Drill Presses

These heavy duty air feed attachments are for automatic or semi-automatic control of spindle feed and retraction. They fit standard drilling machines with single or multiple spindles.

The attachment handles applications requiring up to 2000 lb of total drill joint pressure and will duplicate hand pressures. It is powered by twin, double-acting pneumatic cylinders which operate at air pressures to 100 psi.

The units are easily installed on any make of press. *Write*: Renco-



Sliding bolsters on this new Hamilton press are shown here in the outermost positions for die loading and/or unloading.

HAMILTON ANNOUNCES A RADICAL NEW PRESS DESIGN

This new Hamilton straight-side press—using sliding bolsters and preset dies—is a radical advance in design for performing such operations as blanking, drawing and forming. Its principal feature is the rapidity with which dies can be changed—and the resulting increase in production. As little as 15 minutes need elapse between the end of one production run and the start of another.

This new Hamilton press is ideal for short runs, assures minimum downtime for changing dies, means higher production than two conventional presses in many instances. At the same time, it eliminates both the cost of a second press and of additional operators. Also the sliding bolster feature does away with the time-consuming method of jockeying dies with both cranes and fork trucks—an overhead crane can be used exclusively.

Write today to Dept. 1-K for full details on the high production, cost-saving Hamilton press.

Hamilton Division Hamilton, Ohio

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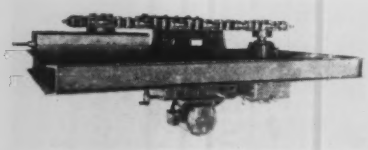
Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools & general machinery

BALDWIN BLH LIMA-HAMILTON

Aire, Div. of Cleveland Pneumatic Industries Inc., 64 Old Orchard, Skokie, Ill. *Phone*: Orchard 4-9484

Drive Is Compact

A variable speed caterpillar drive is available for Alvey-Ferguson overhead trolley conveyors.



Compact construction holds down headroom requirements.

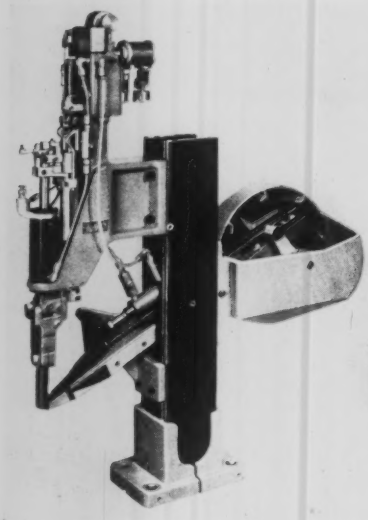
Mounting the drive sprocket directly on the slow speed shaft of the vertical type reducer has eliminated the bulky spur gear and pinion.

Floating and fluid drives, and automatic overload cutoffs can be provided. *Write*: Alvey-Ferguson Co., 2885 Disney St., Cincinnati 9, Ohio. *Phone*: Redwood 1-7000

Assembler Improved

The positioning head and feeder of the Auto-Positioner are mounted on a dual column for compactness, rigidity, and convenient adjustment. They are actuated by compressed air.

The unit will handle parts ranging from 1/16 to 2 in. Parts are automatically transferred from feeder to fixture at speeds up to 6000 an hour. *Write*: Dixon Automatic Tool Inc., 2300 23rd Ave., Rockford, Ill. *Phone*: 5-8756



Drawings Direct Press

With this optical positioning system; holes can be accurately and rapidly located to a nondimensional full-size drawing. Parts are pierced with an 80 ton, RA-101 turret punch press.

The system is valuable for short run work with repetitive drilling. Preparation time is reduced in the fabrication of panels and parts up to 4 x 5 ft in a single handling, or 4 x 10 ft in two handlings. *Write*: Wiedemann Machine Co., 779 Gulph Rd., King of Prussia, Pa. *Phone*: Baldwin 3-2850

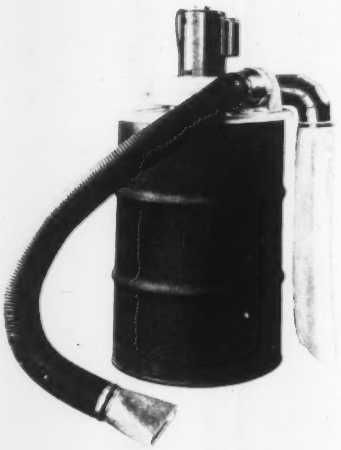
Offers Remote Control

The SM-5 Shaftrol control gear motor permits manufacturers to offer remote or automatic control as an optional feature on their equipment. The unit has a hollow outputshaft and mounts directly on the driven shaft to replace handwheels, cranks, or levers.

It is highly reliable but is offered at about half the cost of previous models delivering the same torques and speed. The device is offered with a built-in potentiometer to provide remote or automatic control. *Write*: Jordan Co., 3235 W. Hampton Ave., Milwaukee 9, Wis. *Phone*: Uptown 1-3200

Dust Collector Improved

The Dust-Master Model 100 is a low cost, portable system. It's a self-contained unit that fits a 55-gallon drum for wet or dry pickup.



Dust and chip laden air is drawn into the drum through a double 90-degree inlet, causing it to rotate around the inside. Heavy dust is precipitated to the bottom and out of the air stream by centrifugal action.

The unit may be used for transferring liquids. *Write*: Cincinnati Fan & Ventilator Co., 3548 Montgomery Rd., Cincinnati 7, Ohio. *Phone*: Jefferson 1-1742

Stacker Has Safety Device

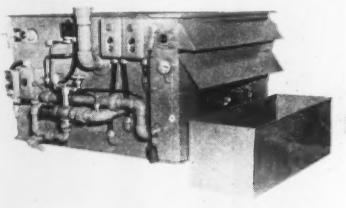
The 24-volt Walkie Stacker, for 2000-lb palletized loads, handles work up to 4 x 4 ft and will stack it more than 10 ft high.

Forward and reverse speeds are varied voltage instead of added resistors in the electrical circuit. All controls are conveniently clustered on the steering handle control head.

A mushroom safety button is provided for operator protection. *Write*: Raymond Corp., 91-169 Madison Ave., Greene, N. Y. *Phone*: 204

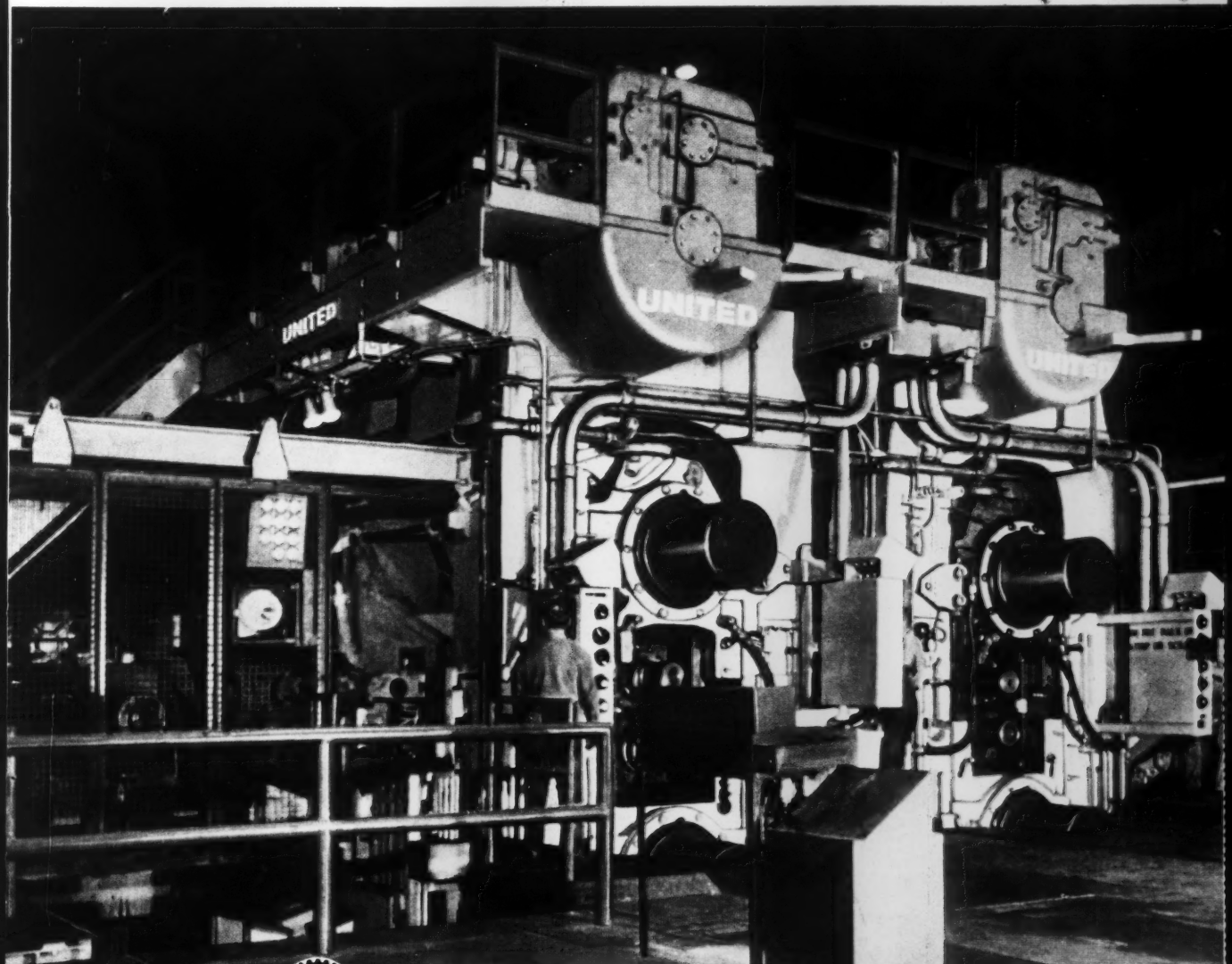
Unit Filters and Conveys

Continuous or intermittent clean coolant backwash is provided automatically by a combination filter and dragout conveyor. A tubular screen rotating at the same speed as



UNITED®

4-HIGH 2-STAND TANDEM TEMPER PASS MILL



UNITED

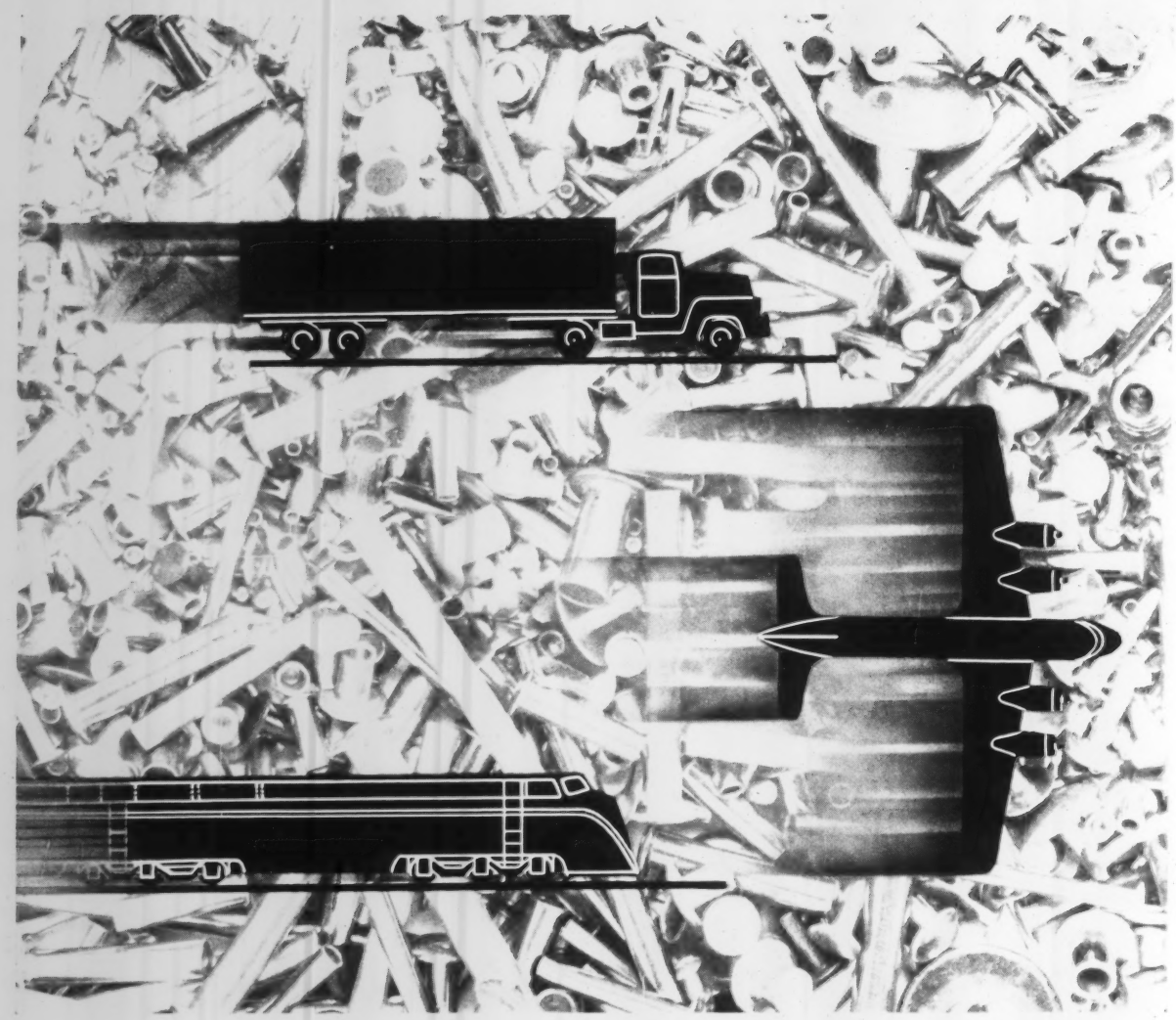
ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at Pittsburgh, Vandergrift, Youngstown, Canton, Wilmington

SUBSIDIARIES: Adamson United Company, Akron, Ohio
Stedman Foundry and Machine Co., Inc., Aurora, Indiana

Designer and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.



NEW INVENTORY SYSTEM SPEEDS RIVET DELIVERIES

Judson L. Thomson now keeps 500 million rivets in stock to meet your everyday needs

This new system keeps our inventory high so *you can keep yours low*. It's based on the 800 most-used standard rivets. It's backed up by productive capacity exceeding 20 million rivets a day. When your order comes in, semi-finished rivets are quickly finished to your specifications . . . and delivery is geared to *your production schedules*.

Next time you need rivets, order from Thomson because . . .
TWENTY MILLION A DAY — SPEEDS RIVETS YOUR WAY.

JTL JUDSON L. **THOMSON** 39 Sawyer Rd. MFG. CO., WALTHAM 54, MASS.

the conveyor system filters the coolant.

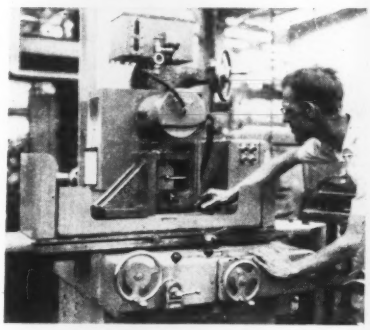
Micro sizes of filtration are determined by screen size and timing adjustment of backwash. One pump and motor furnish coolant to machine and for backwashing at the same time.

The machine will handle water, water soluble oil, and oil coolants. *Write*: Lundholm Mfg. Co., 1121 Charles St., Rockford, Ill. *Phone*: 2-6421

High Table Speed Provided

A substantial increase in table speed is provided by the 6 x 18 in. Type S-3 hydraulic surface grinder. It can reduce grinding time as much as 50 per cent.

The maximum table traverse



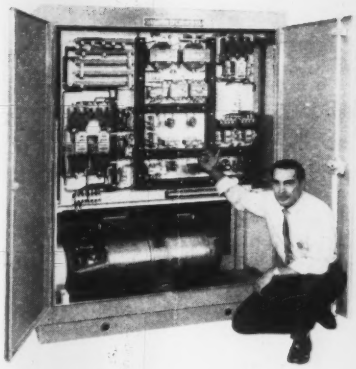
speed is 125 fpm. This high speed reduces burn, checking, and cracking of the work, particularly with heat sensitive steels.

The machine can grind workpieces as high as 15 in. above the table with a standard 8-in. grinding wheel. *Write*: Norton Co., Worcester 6, Mass. *Phone*: Pleasant 2-4641

Drives Are Versatile

These packaged adjustable voltage drives (motor-generator type) combine the convenience and economy of alternating current with the versatility of direct current. They come with standard speed ranges up to 8 to 1 by armature voltage control.

They are available in ratings of 3 to 200 hp for single or multimotor applications; prewired terminals for all user connections simplify installation. *Write*: Square D Co., 4041



N. Richards St., Milwaukee 12, Wis. *Phone*: Edgewood 2-2000

Electrode Reduces Cost

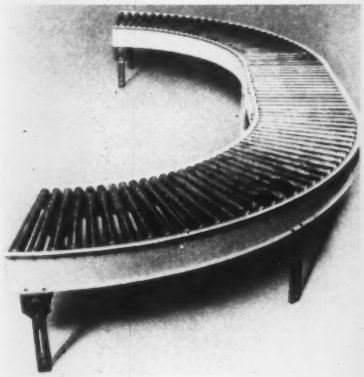
The Fleetweld 7MP electrode reduces the cost of general production and maintenance welding.

Its coating, which includes iron powder, makes it easier to operate and faster than previous E-6012 designs. The electrode is classed as an all-position, ac and dc, mild steel type. *Write*: Lincoln Electric Co., Cleveland 17, Ohio. *Phone*: Ivanhoe 1-8100

Conveyor Has Live Rollers

This power driven live roller conveyor is actuated by a heavy duty V-type belt.

The units are made with straight



face or tapered rollers in various diameters and lengths. Standard 4½ and 6 ft radius and 45, 90, and 180 degree curves are made. *Write*: Sage Equipment Co. Inc., Buffalo, N. Y. *Phone*: Elmwood 5424

Rust and Scale Removed

"Rustbuster" is an alkaline compound for removing deep pitted rust and difficult heat scale from sheets, plates, structural steel, precision parts, and tools.

Light oil and grease films are also removed, leaving a chemically clean surface. It removes paint and varnish from many finishes. *Write*: Octagon Process Inc., 33 Bank St., Staten Island 1, N. Y. *Phone*: Gibralter 7-5800

Unit Is Compact

This Powrweld unit is a combination direct current arcwelder and an alternating current power unit.

The direct current welding gen-

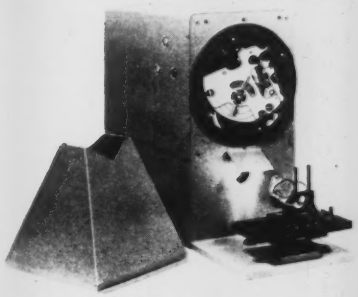
erator is rated 200 amperes, at 25 volts, on 100 per cent duty cycle, and has a welding range of 30 to 225 amperes for intermittent use. The same generator provides full 5 kw, 110/220 volts, single phase, 60 cycle, ac power.

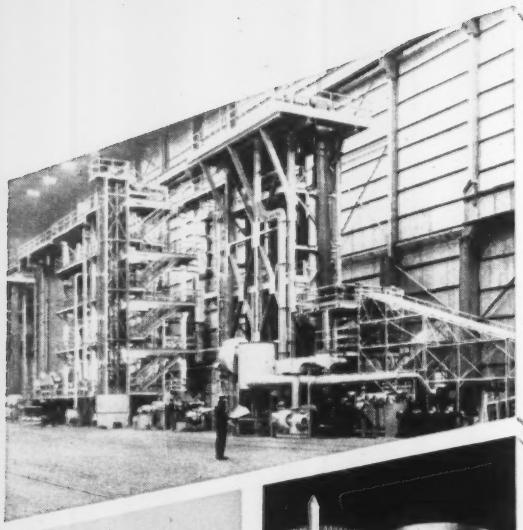
For compactness, the Onan air cooled, 4 cycle, 2 cylinder engine is coupled directly to the generator. *Write*: Hobart Bros. Co., Hobart Square, Troy, Ohio. *Phone*: Federal 2-1223

Device Has Wide Field

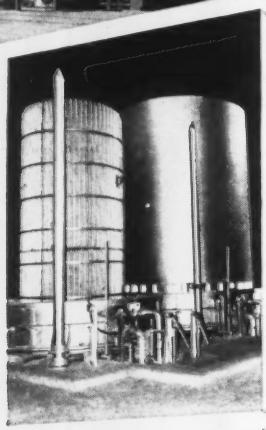
These production comparators are designed for low magnification work in the 3 to 20 power range.

The projectors have large area



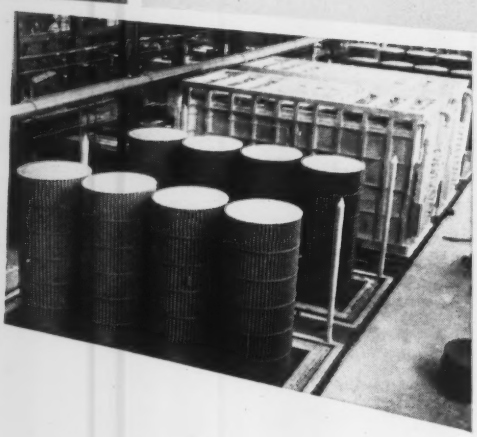


VERTICAL STRIP ANNEALER



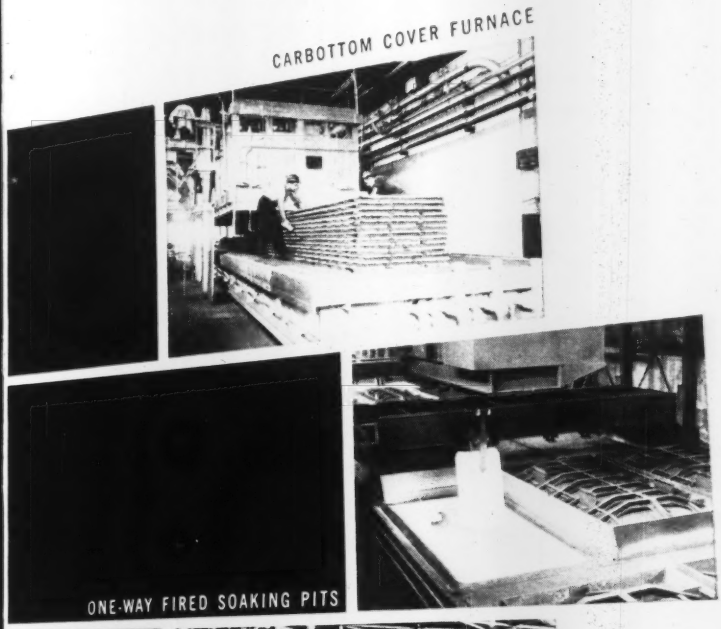
SINGLE-STAND ANNEALERS

CONTINUOUS STRIP GALVANIZER



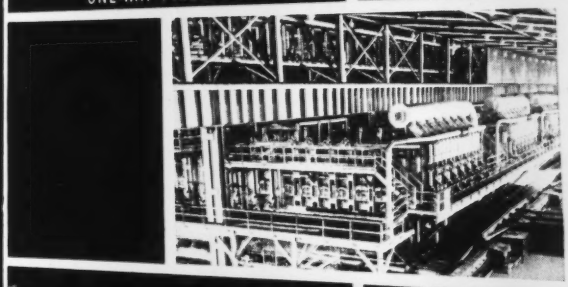
MULTIPLE-STAND ANNEALERS

foundation for steel mill profits

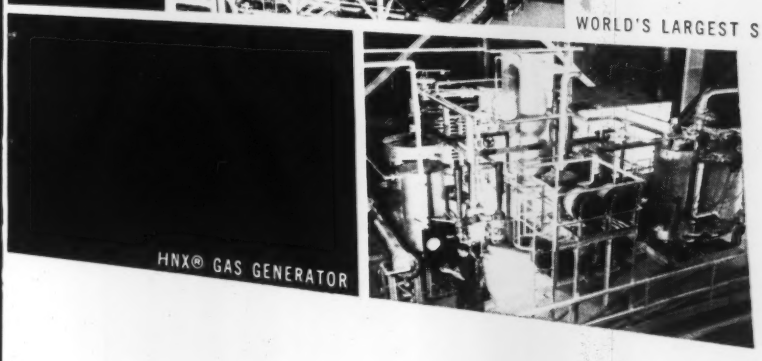


CARBOTTOM COVER FURNACE

ONE-WAY FIRED SOAKING PITS



WORLD'S LARGEST SLAB HEATER



HNX® GAS GENERATOR

You put a solid foundation under your profits whenever you specify Surface equipment. Whatever type it may be, you know it is supported by many interlocked blocks of know-how in heating and handling steel.

The technical skills which Surface has developed in building soaking pits will benefit the man who buys Surface annealing covers. In the same way, Surface concepts of slab heating contribute to high-speed stress relieving . . . carbon restoration to strip annealing . . . controlled atmospheres to wire patenting.

Because of this broad and deep foundation of experience, Surface can improve any single process in the context of a complete sequence of operations. This is to the customer's profit, as many companies will confirm.

Surface

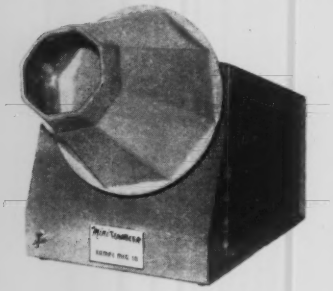
wherever heat is used in industry

screens, long working distances, and wide field coverage. Distortion-free contour and surface images of excellent brilliance and contrast are produced.

Capacity is large, with up to 3-in. field coverage on the subject at one time. The device may be used under ordinary room lighting without enclosures. *Write*: Stocker & Yale Inc., Marblehead, Mass.

Tumbler for Small Parts

The Mini-Tumbler is portable. It's used in finishing small parts. This model features a 24 to 52 rpm



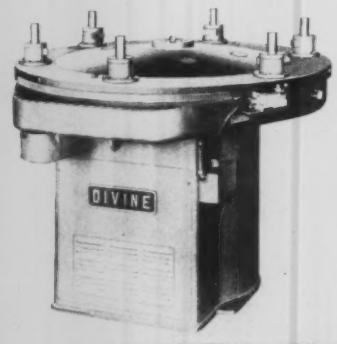
variable speed drive for added flexibility.

With 1 gallon capacity, it is available with either open conical or closed hexagonal burring barrel. Both are protected with orange seamless vinyl plastic lining.

Power is furnished by a 1/12 hp, 110 volt motor. *Write*: Rampe Mfg. Co., 14915 Woodworth Ave., Cleveland 10, Ohio. *Phone*: Mulberry 1-2800

Conveyor Indexes Parts

Model RJ rotary conveyor of the indexing type is for use with polishing, buffing, and brushing head units on automatic installations.



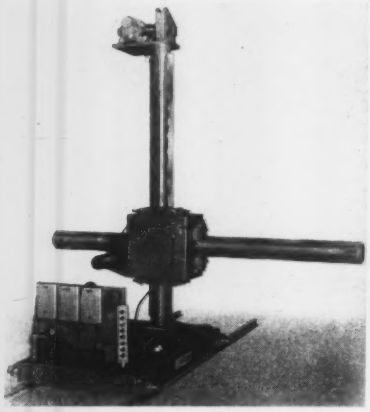
The dial index rate is 120 to 1800 an hour; fixture spindle speed is 12 to 100 rpm. A similar model has a continuous dial motion in place of the indexing type.

An automatic release is furnished so that the two fixture spindles at the front are not rotating for loading and unloading. *Write*: Divine Bros. Co., Seward Avenue, Utica, N. Y. *Phone*: 4-7174

Handles Welding Heads

The Piper Series manipulator is an economy model designed to handle an automatic welding head. Model 606 has 6-ft vertical arc height and 6-ft horizontal boom travel; Model 808 has 8-ft vertical arc height and 8-ft horizontal boom travel.

Powerized elevation (with brake motor, constant speed, pushbutton control, and 360-degree manual column rotation) is standard on all models. *Write*: Pandjiris Weldment Co., 5151 Northrup Ave., St. Louis 10, Mo. *Phone*: Prospect 6-6893

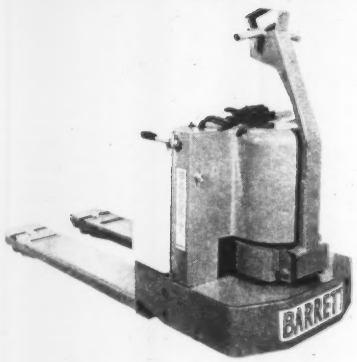


Operates in Narrow Aisles

The Powerox electric pallet, low-lift model (PXG) is a fast and powerful truck for narrow aisles.

A compact drive mechanism with motor and transmission placed above the drive wheel reduces overall length and allows the truck to operate in 6-ft aisles with 4 x 4 ft pallet loads.

Power lifting and lowering by pushbuttons gives positive control over retraction and extension of the



rear wheels for easy positioning. *Write*: Barrett-Cravens Co., 628 Dundee Rd., Northbrook, Ill. *Phone*: Crestwood 2-2300

Substitutes for Acids

Enth-Acid 82, a dry, powdered replacement for liquid acids, is a blend of acid salts, activators, and surfactants. It activates iron, steel, brass, copper, or zinc base diecastings prior to plating.

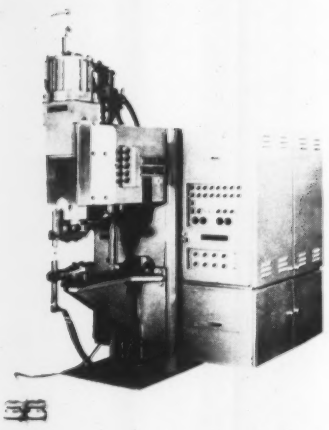
It is also effective as a pickling agent for removing rust and heat treating and welding scale from steel. *Write*: Enthone Inc., 442 Elm St., New Haven, Conn. *Phone*: Spruce 7-5581

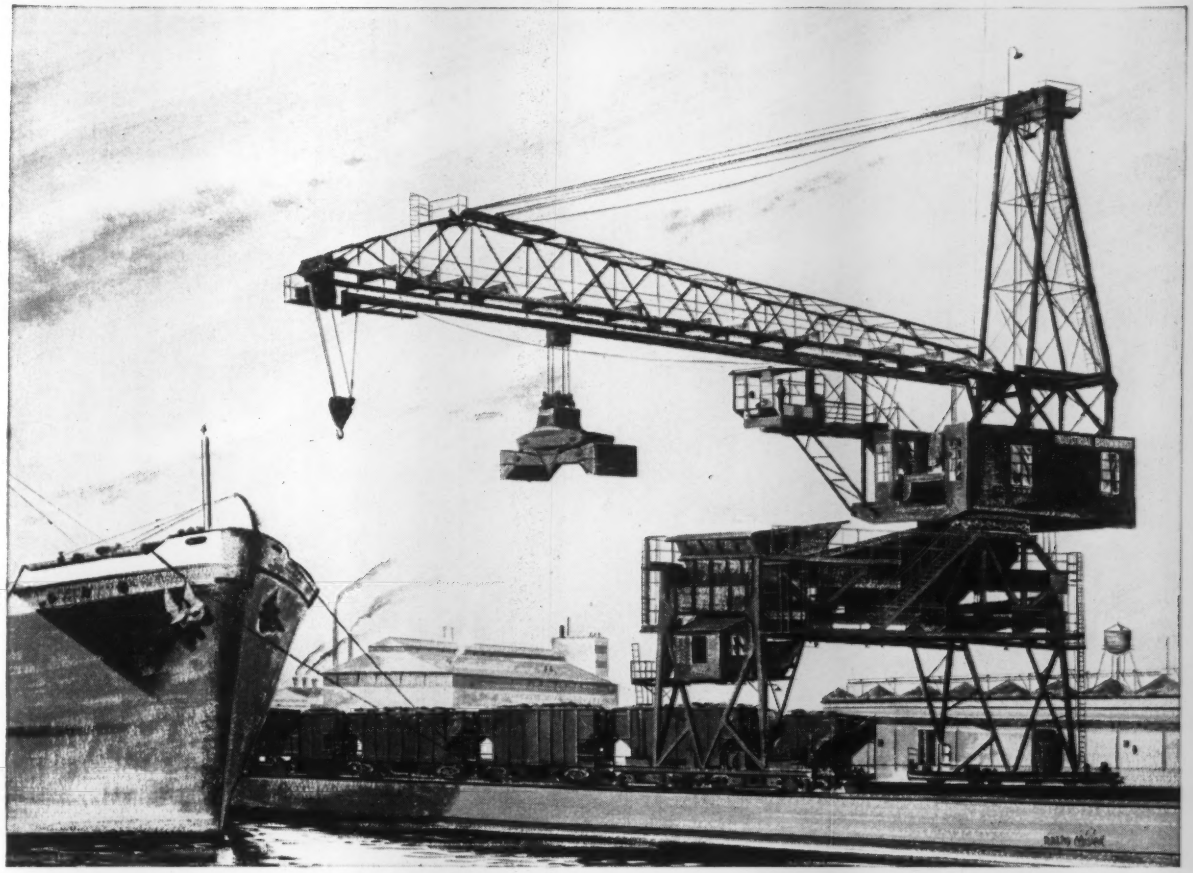
Unit Regulated Precisely

This combination controls triphase direct current spotwelders.

It features precise regulation of all timing adjustments through counting tubes, and is constructed for easy field maintenance.

Sequence indicator lights identify a portion of the control if it





how 75 ton BROWNHOIST combination crane will greatly increase GALVESTON port facilities

The latest type combination boat-unloading crane being engineered and built by Industrial Brownhoist in Bay City, Michigan will substantially improve facilities in the Port of Galveston's 1957 expansion program.

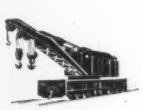
This big, fast-working Brownhoist crane loads or unloads bulk materials from ship-to-cars or cars-to-ship at the remarkable rate of 540 tons per hour! Equipped with 75 foot boom, on which travel both a hook and a Brownhoist-made, 80 cubic foot flush link-type bucket. The entire unit straddles three railroad car tracks located on the pier.

In addition to boat unloading equipment and material handling bridges, Industrial Brownhoist manufactures Diesel-Electric locomotive cranes from 25 to 90 tons, and railroad cranes up to 250 ton capacities. If your firm can profit from reliable, high-speed, high-capacity material-handling equipment, write for new general Catalog No. 562.

201

BROWNHOIST

CLAMSHELL BUCKET



250 TON WRECKING CRANE

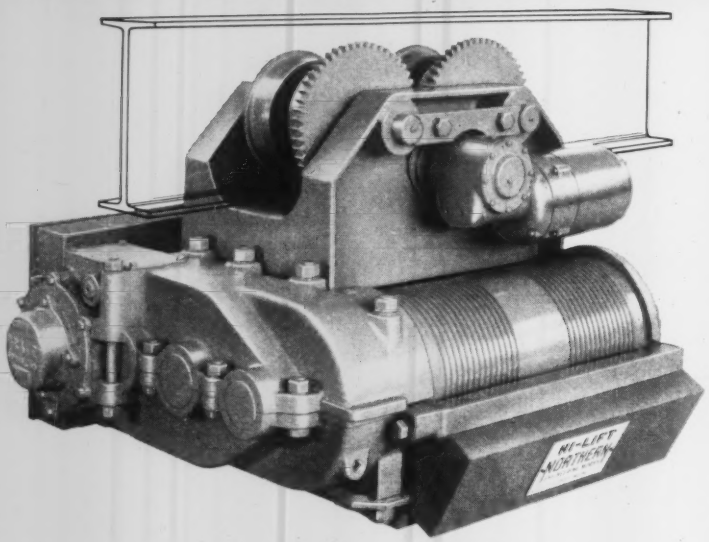
COAL-ORE BRIDGE

CAR DUMPER

LOCOMOTIVE CRANE

INDUSTRIAL BROWNHOIST CORPORATION, BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, San Francisco, Montreal, Canada • AGENCIES: Detroit, Birmingham, Houston

NORTHERN



HEAVY DUTY

HI-LIFT HOISTS

WITH TROLLEY DRIVE

Northern Hi-Lift Hoists, in all models from two through 15 tons capacity, with all their heavy duty, rugged features, including the same low headroom, are now available with a new, inexpensive trolley drive designed for moderate speeds and for single or variable speed control. A worm drive provides smooth, quiet and trouble-free operation. Compact design and arrangement allow maximum approaches with minimum space requirement.

These two-motor hoists are available for A.C. or D.C. current, and are built with standard or fluid coupling drives.

Write for further details.

NORTHERN MATERIALS HANDLING EQUIPMENT

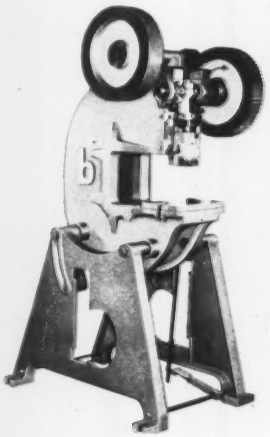
NORTHERN ENGINEERING WORKS
210 CHENE ST., DETROIT 7, MICH.

EH-3555

stops, simplifying troubleshooting. *Write*: Taylor - Winfield Corp., Warren, Ohio. *Phone*: 2252-1

Press Is Back Geared

This press delivers 8 tons of pressure and punches to the center of a 24-in. circle. Standard models



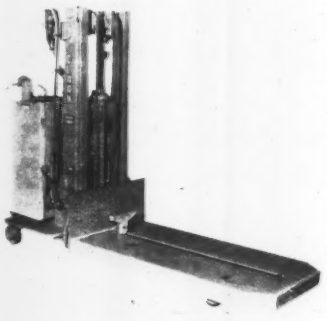
have a 9-in. shut height, exclusive of bolster; shut heights of 12 and 15 in. are available.

The flywheel speed is about 100 strokes a minute. Standard stroke is 1¼ in. The bed area is 8 x 11 in. *Write*: Benchmaster Mfg. Co., Gardena, Calif. *Phone*: Faculty 1-0411

Truck Handles 2-Ton Dies

This Powrworker platform truck for moving and storing stamping dies will lift and tier dies weighing up to 4000 lb.

Dies are pulled on or pushed off the handler's platform with a T-shaped hook driven by a hydraulically powered wormscrew. *Write*: Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich. *Phone*: Woodward 2-6561



It used to take 40 man hours—

now 8 man hours do the job

Prior to delivery of RB-66 type jets and some military turbojet transports, Douglas makes a thorough check to see that no tools or loose items have been left that might cause structural damage. This means inspection of control surfaces and other areas difficult to "get at"—a job that took 40 man-hours even for the relatively small RB-66's.

Now, using Kodak Industrial X-ray Film, Type AA, and a Douglas-designed mobile x-ray unit, the work is cut to 8 man-hours.

This faster film permits areas of as much as 10 sq. ft. to be inspected with one exposure—with the x-ray tube as much as 15 ft. from the surface—and with "quartered" exposure time.

Easy to see how Kodak Industrial X-ray Film, Type AA, can save time and speed up routine examinations. It also extends the service of present radiographic equipment and produces quality results.

Have your Kodak x-ray dealer or Kodak Technical Representative show you what this film can do to lower costs, speed your operations.

EASTMAN KODAK COMPANY, *X-ray Division*, Rochester 4, N. Y.

Read what the new Kodak Industrial X-ray Film, Type AA, does for you:

- Reduces exposure time—speeds up routine examinations.
- Provides increased radiographic sensitivity through higher densities with established exposure and processing technics.
- Gives greater subject contrast, more detail and easier readability when established exposure times are used with reduced kilovoltage.
- Shortens processing cycle with existing exposure technics.
- Reduces the possibility of pressure desensitization under the usual shop conditions of use.

Kodak
TRADE MARK

NEW literature

Write directly to the company for a copy

Data Processing

Bulletin No. 3017 provides information on the Model 210 data processing system. It is capable of handling up to 1000 input signals at high speed, converting to digits, and putting the information on magnetic tape for use on any computer. Beckman Systems Div., Beckman Instruments Inc., 325 N. Muller Ave., Anaheim, Calif.

Wrought Iron

A booklet discusses 4-D wrought iron. Graphs show comparative corrosion resistance in various applications such as brine lines, heater coils, and sand handling equipment. A. M. Byers Co., P. O. Box 1076, Pittsburgh 30, Pa.

Packaging

A pocket size, 48-page booklet describes method of packaging and unitizing products in all industries, as well as recommended methods for shipping by rail and truck, or intraplant handling. Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill.

Conveyors

Bulletin 101 describes the Abbey-Matic conveyor system for process automation. Abbey Process Automation Inc., 37-01 48th Ave., Long Island City 1, N. Y.

Thermocouple Wire

Platinum and platinum-rhodium thermocouple wire in standard and premium grades are covered in a brochure, No. TC-2. J. Bishop & Co. Platinum Works, Malvern, Pa.

Tank Weighing

Bulletin 581 covers this company's hydraulic tank weighing systems. It shows the equipment available to provide indication, recording, printing, and controlling in tank weighing installations. A. H. Emery Co., Pine Street, New Canaan, Conn.

Sealing Units

Catalog No. 658 describes equipment and methods for sealing openings for pressure testing. Mechanical Products Corp., 168 N. Ogden Ave., Chicago 7, Ill.

Statistical Charting

A booklet, built around the use of Graph-A-Plan charting materials, lists seven steps to good charting, and outlines the various types of charts and graphs generally used in business. Labelon Tape Co. Inc., 450 Atlantic Ave., Rochester 9, N. Y.

Torque-RPM Chart

A chart tabulates oz-in. torque vs. rpm at stated horsepower. Engineering data range from 1/2000 to 1/3 hp and from 1 to 14,000 rpm. Avionic Div., John Oster Mfg. Co., 1 Main St., Racine, Wis.

Brass and Aluminum Nuts

Catalog FS-1000 covers a line of aluminum and brass nuts in American Class 2, Unified Class 2-B, and Class 3-B tolerances. Fisher Special Mfg. Co., 446 Morgan St., Cincinnati 6, Ohio.

Generator Insulation

The Silco-Flex impervious insulation system for motor and generator stator coils is described in Bulletin 05B8341A. Properties include resistance to aging, abrasion, chemicals, corona, fire, moisture, oil, solvents, fungus, carbon black, and arcing. Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Stainless Steel

A revised 40-page booklet on the use of stainless steel in the chemical industry includes special sections on the process, plastics, and petrochemical industries; detergent manufacturing; nuclear power industry; and others. A comparative table on stainless steels and a table on the corrosion resistance of stainless are included. Advertising Dept., Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.

Numerical Control

Bulletin GED-3684 covers numerically controlled machines that will allow the economic production of job-lot orders and prototype development. Steps toward establishing it in a plant are suggested and a checklist is offered to see whether a need exists. Case histories cite advantages. General Electric Co., Schenectady 5, N. Y.

Chemical Milling

Design Bulletin No. 7 describes chemical milling of cast parts. Information covers tolerances attainable, suitability, over-all and controlled area reduction, and surface finishes that can be expected when casting such metals as aluminum, magnesium, mag-thorium, steel, and other cast alloys. United States Chemical Milling Corp., 1700 Rosecrans Ave., Manhattan Beach, Calif.

Corrugated Sheets

Brochure P.O. 2458 describes how deep corrugation sheets support greater loads than standard corrugation, cut cost, reduce weight, and save purlins. A safe load vs. purlin spacing chart is included. Product Information Service, Armco Steel Corp., Middletown, Ohio.

Stainless Steel Hose

Specification folder SSDS-562 gives full engineering information on pressure capabilities, flexibility, and suggested usage for Allflex stainless steel hose. The product is available in Monel, bronze, steel, Teflon, and special alloys. Allied Metal Hose Co., 3797 Ninth St., Long Island City 1, N. Y.

Boring Mills

Bulletin 1157 describes 4 and 5 in. table type, horizontal boring, drilling, and milling machines. Cincinnati Gilbert Machine Tool Co., 3366 Beekman St., Cincinnati 23, Ohio.

Fluid Power

Engineering data for designers who use fluid power motors, pumps, valves, and cylinders, are covered in Bulletin 100-P3. Commercial Shearing & Stamping Co., Youngstown 1, Ohio.

Cold-Finished Bars

Revised Bulletin 12-5 serves as a guide to selection and specification of cold-finished carbon steel bars. Elements such as mechanical properties, formability, weldability, heat treatment response, machinability, relative cost, shapes, and size range are included. Joseph T. Ryerson & Son Inc., Box 8000-A, Chicago 80, Ill.

Sprockets

Bulletin No. 3 contains a price list on 99 sprocket sizes and 933 bores. Acme Chain Corp., Holyoke, Mass.

Control Panels

Bulletin GEA-6701 discusses uses in metal rolling and processing industries. Operator control stations are also covered in the 4-page booklet. General Electric Co., Schenectady 5, N. Y.

Demagnetizers

Specifications and price data on 700 varieties of through-type demagnetizers are covered in Bulletin F-458. R. B. Annis Co., 1101 N. Delaware St., Indianapolis 2, Ind.

Milling Support Bearings

Roller bearings for milling machine outboard supports are described in a bulletin. Bearings can be installed without machine rework. Sonnet Tool & Mfg. Co., 580 N. Prairie Ave., Hawthorne, Calif.

Particle Size Analyzer

No. 0708-1, a 4-page bulletin, describes a low cost, general purpose instrument for 0.1 to 40 micron particles. Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.

Analog Tape System

The Model ZA-750, analog, punched tape, data system is described in this brochure. The converter was designed to meet the needs for a rugged, economical, low speed, data processing system. Electronic Engineering Co. of California, 1601 E. Chestnut, Santa Ana, Calif.

Machine Anchoring

A booklet covers all types of general machinery and includes examples, case histories, cost reduction results, vibration studies, and deflection curves. It is the result of long study on engineering vibration control and isolation. Dept. WCH, Felters Co., 210 South St., Boston 11, Mass.

IT PAYS TO STANDARDIZE ON **STANSCREW**

Stanscrew service cuts rejects, speeds assembly for valve manufacturer

A prominent manufacturer of 4-way valves for freon was having trouble on his assembly line. His fasteners, tightened to an extreme degree to prevent seepage of the gas, were breaking on too many occasions. This meant complications in assembly and a high reject rate—which increased production costs substantially.

One of Stanscrew's fastener specialists, called in by a Stanscrew distributor, quickly found the answer. He recommended a standard cap screw and had staff engineers work out the precise torque which should be applied to insure a complete seal at all gaskets, yet eliminate any possibility of fastener breakage. By following these recommendations, the manufacturer has eliminated the problem of fastener breakage, and substantially reduced his reject rate.

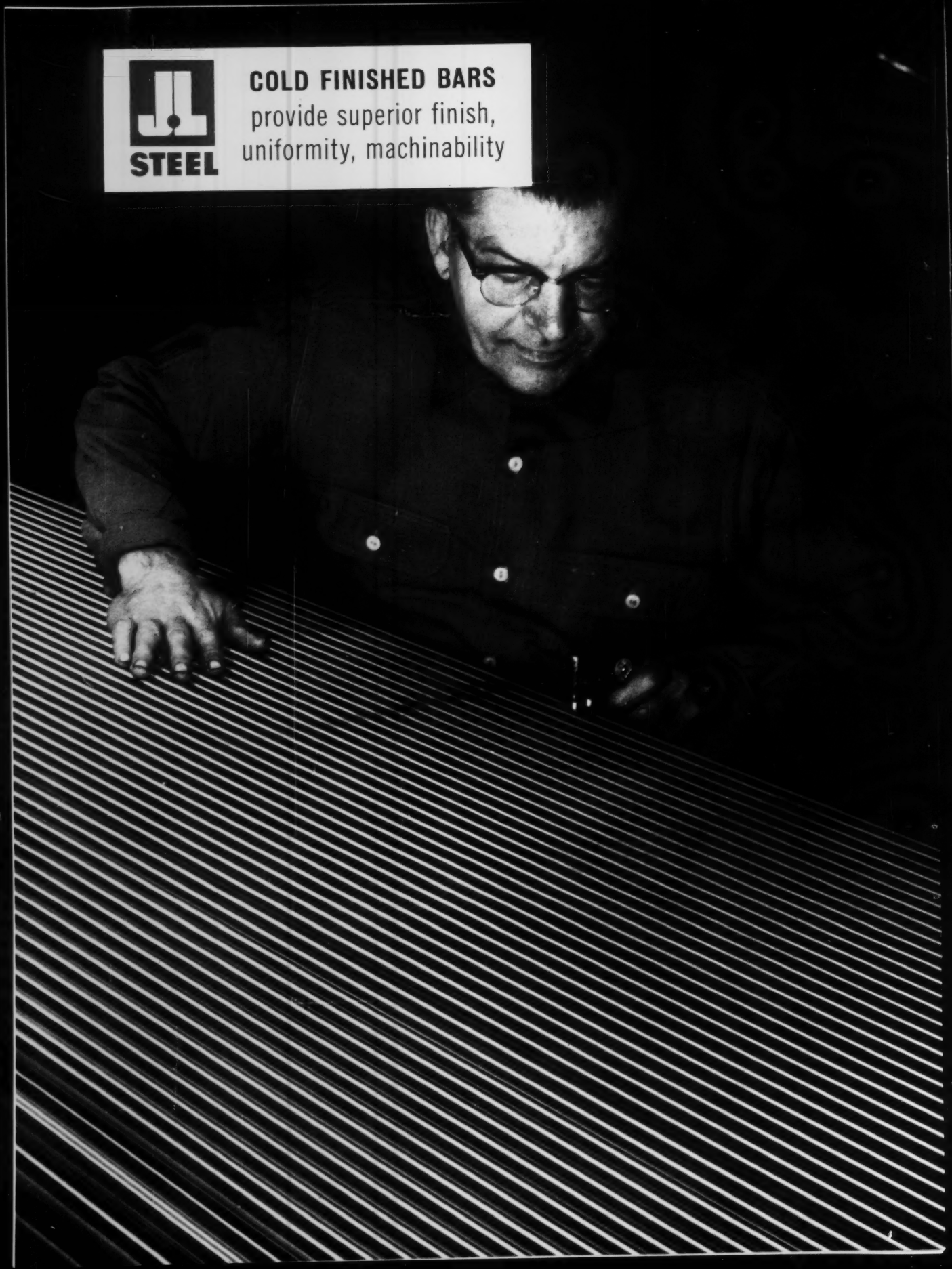
Stanscrew offers over 4,000 standard fasteners . . . including a complete selection of socket, set, and cap screws. All are produced under rigid quality control methods and incorporate the lessons learned during 85 years of fastener manufacture. All 4,000 are always in stock and quickly available.

For the answer to your fastener problem, call your Stanscrew distributor. He will have a Stanscrew fastener specialist promptly study your operation and make specific recommendations.

STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois


JL
STEEL
COLD FINISHED BARS
provide superior finish,
uniformity, machinability

"J&L B-1113 leaded steel provides flawless finish, speeds machining of Singer sewing machine parts 35%"

"Flawless finish of 'Slant-O-Matic' hook assembly components machined from J&L B-1113 leaded steels, and carefully polished, prevents thread snags," according to officials of Singer Manufacturing Company.

With the "Slant-O-Matic" hook assembly moving at 3200 revolutions a minute, the slightest burr or tool mark on any part would snag the thread. Singer officials report the machined surfaces with J&L steel are "definitely easier to polish." They are now using leaded steel in over 100 components on the scores of industrial and household machines they manufacture.

"Use of cold finished leaded steel bars also speeds production 35% on our multiple spindle screw machines. And we get 25% longer tool life," Singer officials report.

Similar machining qualities and speed are possible in your operations with J&L controlled quality cold finished steel bars. A J&L steel specialist can recommend exactly the right steel for any job from J&L's complete cold finished line. Chances are he can help you get improved finishes, higher cutting speeds and longer tool life.

Call your local distributor, or write to Jones & Laughlin Steel Corporation, Dept. 543, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

J&L's B-1113 leaded steel permits 35% higher machining speeds in this multiple spindle screw machine operation at Singer Manufacturing Co., Elizabethport, N. J.

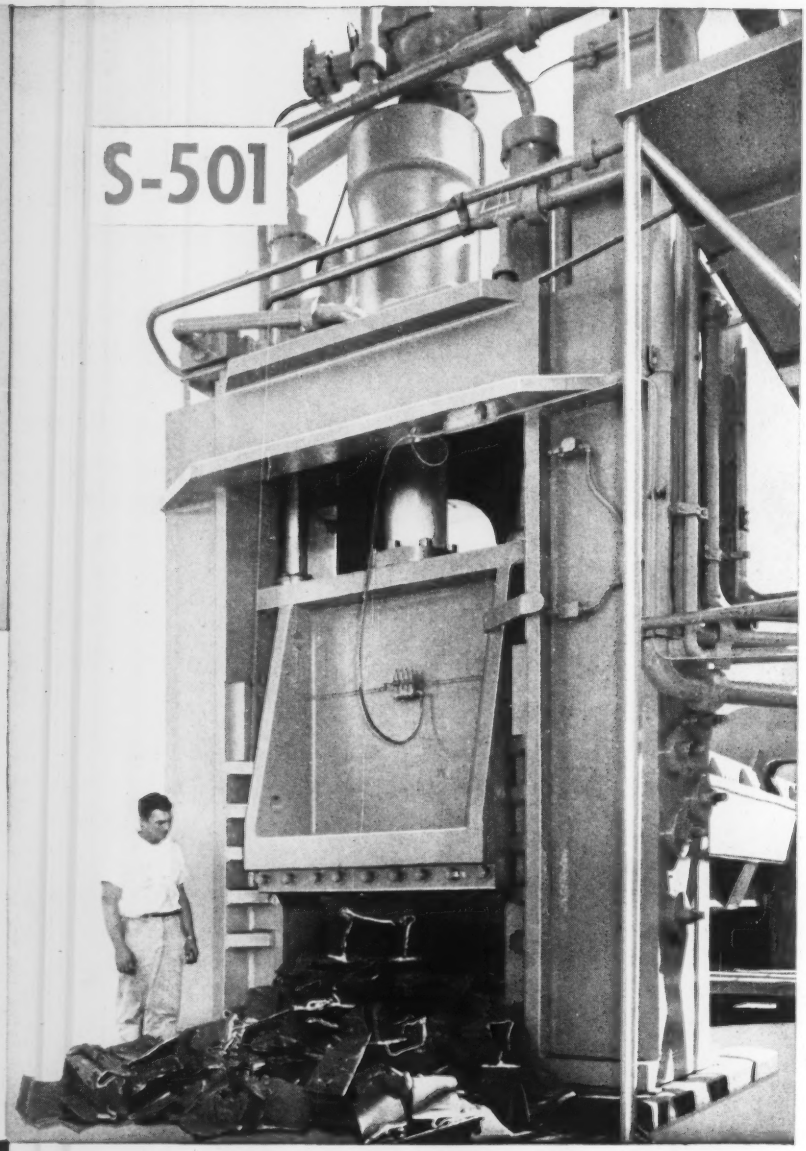
Superior surface finish of these hook assembly components prevents thread snags on Singer's "Slant-O-Matic" machines. Parts are machined from J&L leaded steel bars.

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA

STEEL

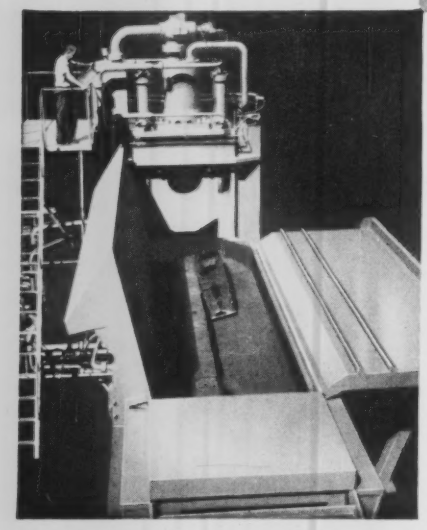
CUTS 200 TONS PLATE SCRAP IN EIGHT HOURS



production is continuous

labor costs 70% lower

The Harris Shear is revolutionary in design. It is the first new development in the scrap industry since the introduction of the Baling Press. Railroad scrap, pipe, farm, industrial, automobile and miscellaneous junk shop scrap work through on a 12 second cycle. A 3 man crew and a crane handle the job in all kinds of weather.



The charging box is 264" x 80" x 30". It has a flat type loading hopper. The cover and charging ram operate like a baler. This means more material under each stroke of the knife.

The Harris Shear brings new profits to Scrap Yards

HARRIS FOUNDRY & MACHINE CO.

Hydraulic Engineers Since 1889

CORDELE, GEORGIA

Talk with a Man from Harris

Market Outlook

Output Hits New High for '58

FOURTH QUARTER steel production is now expected to be about 25 million ingot tons—easily the best quarter of the year.

During the quarter just ended, steelmakers operated their furnaces at 60 per cent of capacity and produced about 21.2 million tons. (September's output—7,560,000 tons—was the largest of any month this year.) In each of the first two quarters, the ingot rate averaged 54.1 per cent and production was about 18.9 million tons. To date, 59 million tons have been produced. If fourth quarter output is up to expectations, 1958 will be an 84 million ton year.

PROMISING START— As steelmakers head down the homestretch, they are spurring production to new highs. Last week, they boosted their operations to 68.5 per cent of capacity, the highest level of the year. Production was about 1,850,000 net tons of steel for ingots and castings, largest since the week ended Nov. 24, 1957.

SHEETS MOST ACTIVE— Despite the slowness of automotive ordering, there's a good demand for sheets. Appliance manufacturers, furniture makers, and many lesser consumers are taking substantial tonnages. Few buyers are building inventories, but nearly all have stopped trimming them. They can't expect mills to deliver cold-rolled sheets in less than five or six weeks. Demand for galvanized products is so great that some producers have put their salesmen on quotas. Delivery promises of six to eight weeks aren't unusual.

TIN PLATE BOOMING— October will be a banner month for tin plate producers. They've been deluged with orders since announcing that prices would go up Nov. 1. Canmakers want their November tonnages delivered immediately, but it's easier said than done. Some of the mills are running short of processed steel — leadtime is about 45 days.

BETHLEHEM'S MOVE A PUZZLE— Instead of raising its tin plate price as much as other producers will on Nov. 1 (35 cents a base box), Bethlehem Steel Co. will boost its Sparrows Point, Md., quotation by 25 cents. By eliminating the 10-cent differential (and making its price the same as Pittsburgh's), the company may hope to discourage midwestern producers from invading its market or it may hope to expand its own trading area. If its base price is the same as those quoted by Pittsburgh and Chicago producers, Bethlehem can compete with them for west coast business. (The transcontinental freight rate from Sparrows Point to California is the same as from Chicago.)

Although Bethlehem's price will be 10 cents below U. S. Steel Corp.'s price at Fairless, Pa., it's unlikely that the corporation will back down. Its freight advantage on shipments to major customers in New York and New Jersey is more than 10 cents a base box.

WHITE SEES RECOVERY— "We're on our way up now," says Charles M. White, chairman of Republic Steel Corp. "Automotive buying is beginning to move, and that makes the fourth quarter look better right off the bat. We're still waiting for the oil well drillers to use up their inventories. When they start buying pipe in volume again our outlook will be still better." Mr. White estimates the industry's production at 82 million to 84 million tons this year and at more than 100 million in 1959.

WHERE TO FIND MARKETS & PRICES

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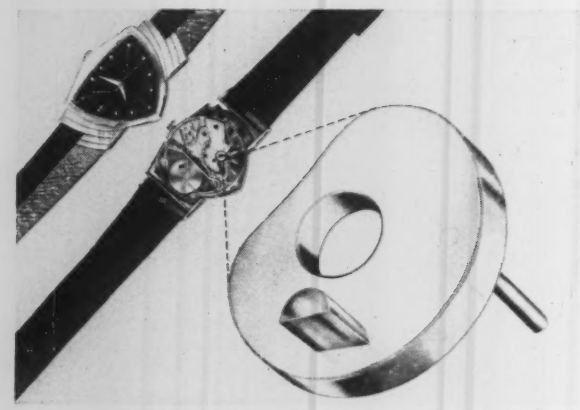
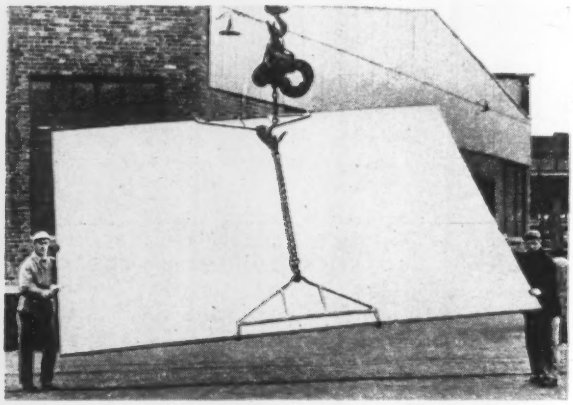
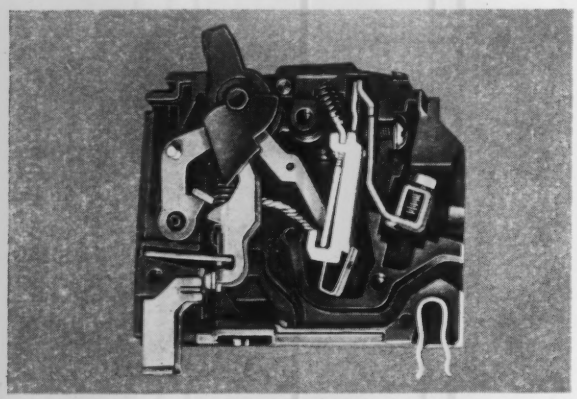
1/7000 OF AN OUNCE or 7 tons. In metals, it's the right combination of properties that counts. So just specify the properties you need. You may find the answers from Anaconda very interesting.



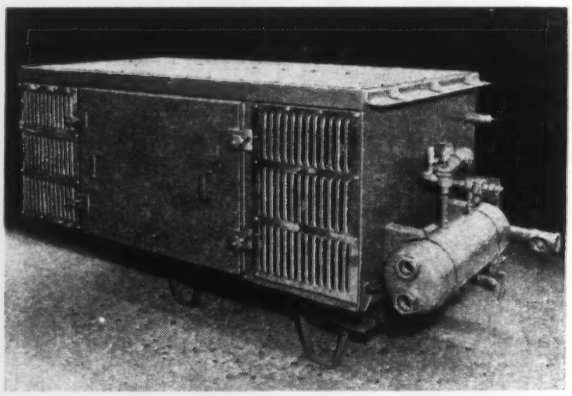
HAMILTON WATCH CO., for the world's first electric wristwatch, demanded these qualities in metal for a vital 1/7000-ounce indexing roller — high hardness and tensile strength; ease of blanking, machining; nonmagnetic properties. Anaconda Ambraloy-901 met the need perfectly. The magnified pinhead-size assembly shown above has a half-round sapphire jewel. The pin limits balance motion.



ALLIS-CHALMERS — building what may be the world's largest surface condenser for Commonwealth Edison Co. — needed tube sheets which combined strength and corrosion resistance with machinability. The answer was Anaconda leaded Muntz metal — 4 plates, each 13' x 17', 1½" thick, weighing over 7 tons. When drilled, plates support 21,960 tubes, for 200,000 square feet of condensing area.



SQUARE D COMPANY needed low electrical resistance, high spring properties, fatigue resistance in critical parts (in color above) of their QO circuit breaker. Electrical resistance of ordinary phosphor bronzes was too high. So was the cost. Engineers of The American Brass Company suggested Anaconda Ambronze-474 and Square D found it had the right combination of properties for the need. And this metal provided superior forming and lower material costs.



THE TRANE COMPANY'S railroad air-conditioning "dry-wet" combination condensers are mounted under cars — facing severe corrosive conditions and a beating from roadbed gravel and stone. Exposed metal, including casing, liquid receiver, 170-gal. water tank, must have superior corrosion resistance, high strength and toughness. Trane has found Everdur®, Anaconda's group of copper silicon alloys, meets its needs. And Everdur is easy to fabricate.

Starting with 93 standard alloys, The American Brass Company can make minor variations in composition, fabrication, and annealing to provide an almost unlimited number of combinations of useful properties. When new or unusual problems rise, ask for the help of the Technical Dept. in selecting the right metal. For such help or a copy of Publication B-32, "Anaconda Copper & Copper Alloys," write: The American Brass Company, Waterbury 20, Conn. 5854

ANACONDA®

COPPER · BRASS · BRONZE · NICKEL SILVER MILL PRODUCTS

Made by The American Brass Company

STEEL
QUARTERLY SURVEY

COMPONENTS	CURRENT INVENTORIES					4th Quarter FORECAST		
	UNDER 10 DAYS	10-30 DAYS	30-60 DAYS	60-90 DAYS	3-6 MONTHS	LOWER	SAME	HIGHER
CASTINGS . . . . . Die, gray iron, malleable, nonferrous, steel.	6%	18%	54%	17%	5%	17%	70%	13%
OTHER FORMED COMPONENTS . . . . Forgings, stampings, springs, wire shapes.	1%	16%	50%	22%	11%	21%	63%	16%
MACHINED COMPONENTS . . . . . Bearings, couplings, cylinders, gears, screw machine products.	6%	18%	47%	24%	5%	23%	67%	10%
ELECTRICAL EQUIPMENT, MOTORS . .	14%	17%	48%	11%	10%	20%	76%	4%
FASTENERS	—	22%	44%	31%	3%	14%	74%	12%
MECHANICAL RUBBER GOODS, BELTING	12%	32%	34%	18%	4%	16%	72%	12%

FIGURES are percentages of respondents to STEEL's quarterly survey. COLOR UNDERSCORED figures show how most respondents reported.

Component Inventory Levels Stabilize

Most buyers are pleased with their stocks. They'll cut inventories of electrical equipment and machined components moderately. Spot shortages begin to appear

ONLY two in every ten buyers of components plan to trim inventories in the next three months. Seven will keep stocks at current levels. One will add to his supply. Such satisfaction indicates that sellers shouldn't be hampered by excess stocks of customers in the fourth quarter.

STEEL's quarterly survey of component buyers shows that inventory cutting is continuing only in machined components, electrical equipment, and motors. But in those categories, as in others, the large majority of buyers have already completed inventory cutbacks.

As inventory reduction grinds to a halt, you'll see more spot shortages and fewer fabricators reporting oversupplies.

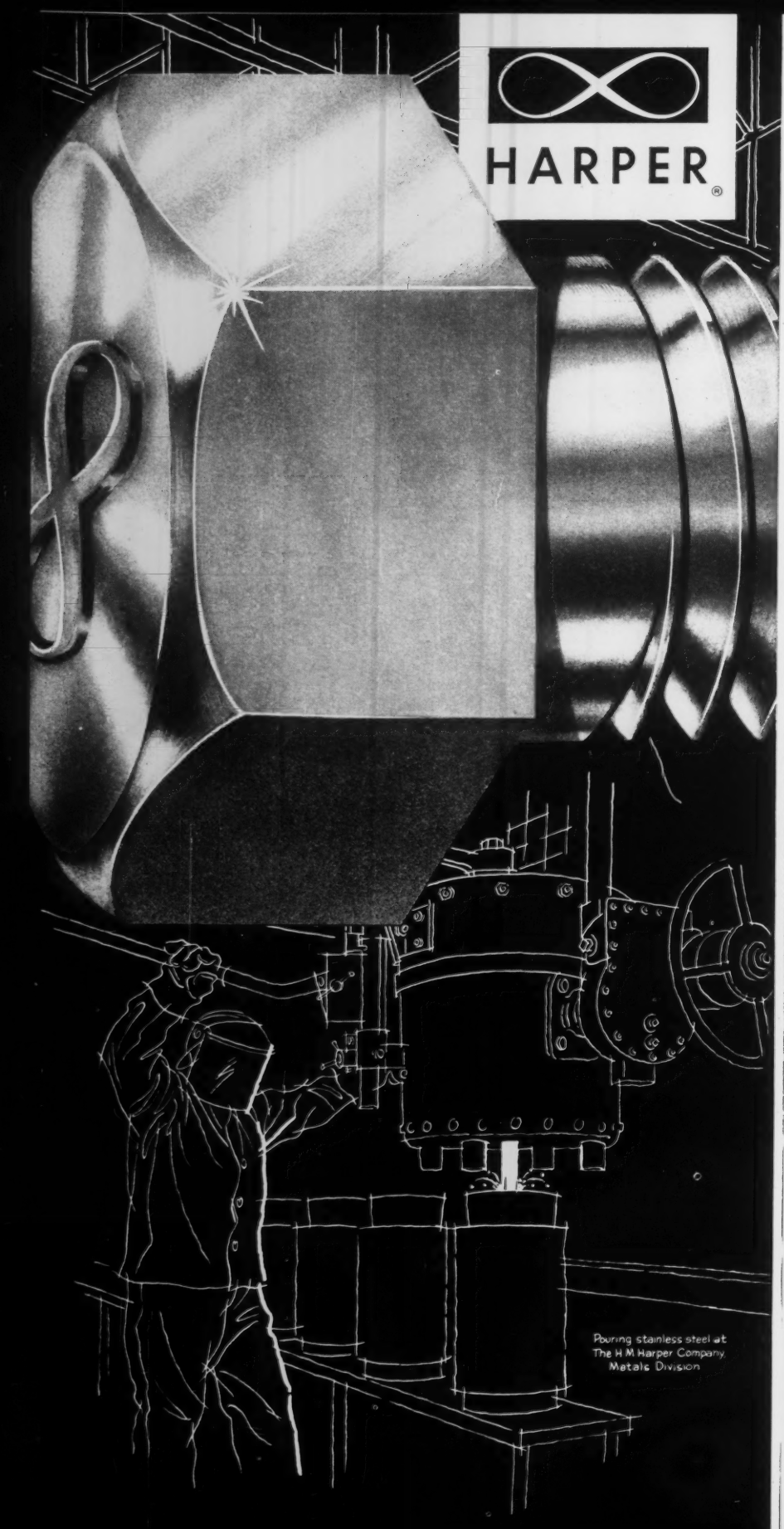
Shortages Begin—None of STEEL's respondents say lack of components delays their production schedules, but an increasing number complain of difficulty in receiving electrical equipment, bearings, castings, and large electric motors when desired. Supplier backlogs are lengthening, slowing deliveries.

Fifteen per cent of users of relays and switches say deliveries are slow. About one in ten buyers of bearings criticizes delivery.

Surpluses Disappear — In early third quarter (STEEL, July 7, p. 95), 13 per cent of buyers of motors over 5 horsepower said they had more than they wanted in inventory. Now only 8 per cent are displeased with their inventory levels. Earlier, 11 per cent of consumers of forgings said they had more than they desired. Now 3 per cent report a surplus.

Changes in inventory planning should bring a greater volume of orders to foundries in the fourth quarter. Some 45 per cent of users of steel castings hold lower inventories now than they did three months ago. About 40 per cent of nonferrous castings users have trimmed stocks in the last three months. One in three buyers of gray iron and malleable castings has a lower inventory.

Inventory slashing trends depressed foundry sales this summer, but founders can take encouragement from the intentions of their customers for the remainder of this year. Only 15 per cent of steel castings buyers will lower inven-



tories in the next quarter; 9 per cent will boost stocks. About 18 per cent of nonferrous users will have lower stocks according to present plans, while 15 per cent will build supplies. About 15 per cent of gray iron buyers expect inventories to dip in the next quarter, while 10 per cent think stocks will be higher.

Inventory Reduction Slower— Buyers of other parts show a similar inclination to halt inventory reduction and keep stocks near current levels. Among all buyers responding to the survey, 32 per cent said their stocks are lower than they were in July, while 10 per cent said they're higher. Looking ahead, 19 per cent think they'll be lower in three months; 12 per cent expect stocks to rise.

Satisfaction with current inventory levels also shows in days of inventory held by fabricators. Few buyers have more than a three-month supply of any component. Only in springs and wire shapes is there much room for more inventory reduction. About 38 per cent of buyers hold more than they can chew up in 60 days.

At the other end of the scale, only a scattering of respondents said stocks were lower than desired. A sudden increase in demand for belting and electric motors could catch some buyers with stocks too low. About 18 per cent of belting purchasers and 22 per cent of users of 1 to 5 hp electric motors have less than ten days' supply. An Illinois buyer reports he built stock of those motors from 10 to 20 days in the last three months to ward off a possible shortage.

With inventories averaging about 45 days, most purchasing agents will probably agree with a Philadelphia buyer who reports with pleasure: "We have a well-balanced inventory with no serious shortages or oversupplies."

Hike Plumbing Fixtures

Prices of plumbing fixtures and home heating equipment have been advanced 5 per cent. American Radiator & Standard Sanitary Corp. raised its prices across the board early last month. Other large producers took similar action about the same time.

Distributors . . .

Prices, Page 128

Failure of sales to pick up as expected following Labor Day is disappointing to distributors. Bookings during June, July, August, and September varied only slightly. Distributors hope that October business will improve substantially, but so far there is nothing to indicate it will. Historically, improvement in distributors' sales lags three months behind an upturn in those by mills.

Prospects are that sales by distributors this year will fall 30 to 35 per cent below those for 1957.

Sheets (cold rolled, hot rolled, and galvanized) are the fastest moving items. Hot rolled bar sales are improving, but plates and shapes are dragging.

Steel service centers' stocks are ample. The operators are buying a little more material from the mills, but in most instances they are merely replacing outgoing tonnages.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 122 & 123

Automotive requirements are prominent in the improved demand for sheets and strip reported by the mills, but the betterment largely reflects heavier diversified consuming needs. Some makers say the pick-up in their bookings has come without much benefit from auto tonnage.

Specifications are increasingly active from manufacturers of household appliances, sanitaryware and office equipment. This is affecting hot and cold rolled sheets, and electrical sheets and enameling stock as well.

Await Auto Surge—In general, the sheetmakers are waiting for the surge of automotive orders that's expected when General Motors and Chrysler nail down labor contracts with the United Autoworkers.

One Pittsburgh mill reports its September shipments were about 10 per cent above those in August, and it looks for continued pickup this month. November is expected to be a good month, but some sellers are apprehensive about December volume, anticipating a buying slowdown as users trim inventories for tax purposes.

Shipments Extended — Stronger

HARPER®

Corrosion-resistance starts here

TITANIUM . . . an established member of the Harper family of metals

The Harper technique for producing Titanium Fastenings includes hot and cold working, delicate machining, precise finishing, and detailed testing.

Fastenings, made for commercial, aircraft and missile applications, range from tiny screws up to 2-inch forgings . . . with tolerances held to plus or minus .0003 inch. Tests such as Magnaflux, Metal-o-Graph, Spectrograph, Profilometer Amplifier, and Contour Profilometer Comparator insure utmost accuracy with respect to physical and dimensional characteristics.

Harper's experience with titanium reaches back to the time when the wrought metal was a laboratory curiosity. Harper is now a leading producer—not only in the production of Titanium Fastenings—but in the production of *extruded titanium metal shapes* in its Metals Division. So . . . when your inquiry comes to Harper . . . it is handled by personnel schooled in the technicalities of titanium through every phase of engineering, laboratory procedure, and production.

Titanium is now an established member of the Harper family of corrosion-resistant metals —high temperature alloys, stainless steels, monel, nickel alloys, aluminum, copper, brass, and bronze. We'll gladly work with you to see if titanium has advantages for you. Your inquiry is invited.

THE H. M. HARPER COMPANY

8200 LEHIGH AVENUE • MORTON GROVE, ILLINOIS

demand is being reflected in a slight extension of deliveries. Hot and cold rolled sheets are now quoted four to six weeks. Some producers of low silicon sheets, required for fractional horsepower motors, are booked into December. Delivery on enameling stock runs to eight weks.

Pressure for galvanized sheets continues strong and buying is diversified. Some mills have no tonnage to offer under eight weeks, and in a number of cases, producers have set up quotas for sales offices. In general, galvanized deliveries extend six to eight weeks.

Revises Extra—Inland Steel Co. has followed the lead of Armco Steel Corp. in reducing drawing extras on enameling iron. As reported in STEEL (Page 115, Sept. 22), the extra now is 25 cents per 100 pounds on all grades, compared with 45 cents on 21 gage and heavier, and 55 cents on 22 gage and lighter.

CRANEMASTERS

. . . fill the bill for

CONTINENTAL CAN CO.

This 10-ton cab-operated *Cranemaster* is the first of two in service for Continental Can Co. Like so many other manufacturers, Continental Can Co. found Cranemasters *the top initial value . . .* with lasting satisfaction assured by Abell-Howe's years of experience in building overhead handling equipment that better *fills the bill* for industry of all kinds.

CAPACITIES TO 15 TONS —SPANS TO 60 FT.

CRANEMASTERS
FOR BETTER CONTROL OF COSTS!

First, you save on Abell-Howe low engineering and production costs! Then you save on operating costs because of *Cranemaster* speed and dependability... and the precise control you need for the most demanding lifting-loading jobs.

Send For Bulletin C-110

7747 Van Buren Street **ABELL-HOWE COMPANY** Forest Park, Illinois

Offer Brass-Steel Grades

American Nickeloid Co., Peru, Ill., is introducing premium grade brass-plated steel in 24 in. widths, and standard grade brass-plated steel in 32 in. widths. Both carry heavier plating thicknesses than were previously available, and prices have been reduced to allow for cost savings of 25 per cent or more.

Tin Plate . . .

Tin Plate Prices, Page 123

Other producers are following the lead of U. S. Steel Corp., advancing tin plate and other tin mill products about 3.5 per cent, effective Nov. 1. Under the new schedule, black plate is $8.20 per base box; No. 25 electrolytic tin plate, $9.10, and hot dipped coke tin plate, $10.40.

The fact that Bethlehem Steel raised its prices only 25 cents per base box at Sparrows Point whereas U. S. Steel raised its price 35 cents at its Fairless Works and at Birmingham has caused some eyebrow lifting in the trade. Bethlehem's action eliminated the Sparrows Point differential over the Pittsburgh price that formerly prevailed.

Bethlehem's decision to hold its price down is thought to have been influenced by a desire to maintain its competitive position on the Pacific Coast, where U. S. Steel advanced its price only 25 cents. Bethlehem ships considerable tonnage by water to the West.

Food packers will have to pay more for tin cans after Nov. 1 when prices are increased to compensate for higher tin plate costs. Tin plate prices go up 3½ per cent on that date.

American Can Co. will abandon its practice of applying a percentage increase uniformly across the board, instead adjusting prices on each type and style of can. Continental Can Co. will announce its policy shortly.

October should be an active tin plate shipping month. To beat the Nov. 1 price increase, canmakers are expected to take deliveries on substantial tonnages over the next several weeks. Mill stocks will likely be depleted to a great extent by the end of this month. November will be a lean shipping month with consumption off seasonally.

Steel Bars . . .

Bar Prices, Page 121

Hot carbon bar demand is edging upward and delivery promises are becoming a shade more extended. Shipments, though, continue relatively easy and consumers with attractive orders to place can obtain almost any delivery they desire. Hot bars are being rolled on a 30-day cycle in the Midwest, and for the smaller sizes mill schedules are full.

In general, hot bar delivery promises range from one to three weeks, depending on mill cycle; on hot alloy bars, one to four weeks. Cold-finished carbon bars can be had from stock in many of the popular sizes in many cases, and, if not from stock, can be had within a week to ten days provided hot bars are on hand.

On cold-finished alloys, the average promise is more extended. Where special analysis tonnage is involved, some deliveries extend as much as six weeks.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 121

Reinforcing bars are moving well, and another month or so of good building weather should hold volume up until mid-November at least. Producers' bookings are substantial, but much of the tonnage won't be shipped until next year.

Wire mesh for concrete construction is moving briskly as contractors drive to complete jobs before cold weather sets in.

Reinforcing bar requirements for California's 1959-60 highway program are estimated around 75,000 tons.

Underscoring poor demand for domestic reinforcing bars in the Southwest, a private survey shows that during the first eight months this year 75,000 tons of foreign bars were imported through Texas ports.

Tubular Goods . . .

Tubular Goods Prices, Page 127

September order volume was "pretty good," says a Pittsburgh producer of tubular products. Butt-weld orders were off about 10 per cent from the August volume, but demand for standard and miscellaneous items was considered "all right." Also, the movement of oil

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HYPOID—Sizes from 1½" to 28" dia.

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WORMS AND WORM GEARS—Worms to 7" dia. Worm gears to 36" dia.

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country goods was slightly better, while shipments of specialties showed improvement.

Tubular goods suppliers in the Southwest are still burdened with large inventories. One firm is reported to have downriver stocks totaling 20,000 tons.

Although it's customary for buyers to reduce their inventories for tax purposes at yearend, mill shipments probably won't dip much this quarter as consumers' inventories are already near rock bottom.

U. S. Steel Corp.'s Consolidated Western Div. is closing its Provo, Utah, pipe mills for an indefinite period due to lack of orders.

Markets New Magnet Wire

Aluminum Co. of America, Pittsburgh, has placed on the market a new line of aluminum magnet wire. The company has arranged with Rea Magnet Wire Co. Inc., Ft. Wayne and Lafayete, Ind., to make and sell the wire as an Alcoa product.

Wire . . .

Wire Prices, Pages 123 & 124

U. S. Steel Corp. has rescinded the $15 per ton advance on galvanized wire for aluminum cable reinforcement that it recently effected. It is now quoting the former price of $12.65 per 100 pounds.

This action follows the lead of Detroit Steel Corp. which a week ago said it was reducing its price because of foreign competition. It's expected other producers will also abandon the $13.40 price.

"Our September shipments will top August's by 10 or 15 per cent," reports a Pittsburgh wiremaker. "Our sales hit bottom in February, and we've been struggling upward ever since. September is usually a good month, but this year the pickup has been more than seasonal. Consumers have increased their orders, especially in automatic welding wire."

A slight increase in demand in New England is centered in high carbon specialties, spring and cold-heading grades. Pressure is being exerted for delivery, and, while consumers have worked inventories down, most of them are not building stocks.

Plates . . .

Plate Prices, Page 121

Although delivery promises remain easy, the plate market is more active. Bookings are better since many consumers have completed inventory adjustments. Still, not much buying for stockpile is expected since shipments are readily available.

Sheared carbon plates can be had within two to three weeks—sooner in some instances.

The strike at a leading Canadian steel mill (Steel Co. of Canada Ltd.) has resulted in a pickup in demand for plates from Canada. Also, European requirements for ship plates are bolstering eastern platemakers' order books. Barge plate needs lag at Pittsburgh.

Inquiry for alloy steel plates continues poor, reflecting slow demand from the oil and chemical industries.

Plate order volume is up possibly 5 to 10 per cent in the Chicago market, compared with a month ago, but rolling schedules continue on the slack side. At Boston, buying (except for ship needs) shows little improvement. Bids close Nov. 20 on four cargo ships, American Export Lines.

Inland Steel Co., Chicago, revised its quality extra on hot-rolled ledloy plates, effective Sept. 24. This extra is unchanged at $1.70 per 100 pounds, but it no longer includes the extra of 65 cents per 100 pounds for silicon-killed steel, nor the forging quality extra of 85 cents per 100 pounds.

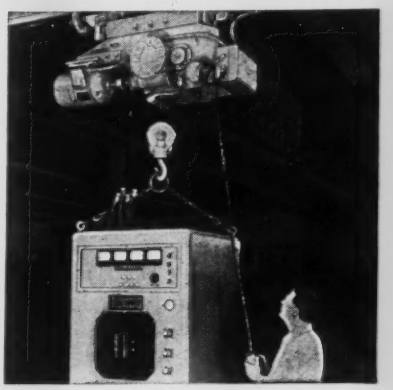
Structural Shapes . . .

Structural Shape Prices, Page 121

Highwaywork continues prominent in the structural market. Fabricators report diversified inquiries: A good sprinkling of public projects (other than highways), including schools and institutional structures, and a substantial volume of private building, including office structures and apartments.

Industrial construction is light, compared with demand a year ago, but work in this category is developing right along.

Most of the larger and medium-sized fabricating shops have four to five months' work on their books. A few can work in additional tonnage



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for shipment within three months.

Small shops are having a more rugged time; some of them hold virtually no backlogs. Most of these small fabricators are handicapped by not being set up to handle bridgework.

It is estimated that about 228,860 net tons of structural steel will be required for the California highway program for fiscal 1959-60.

August fabricated structural steel shipments, totaling 298,000 net tons, were up 3 per cent from the preceding month, reports the American Institute of Steel Construction. Shipments were 2.5 million tons in the first eight months of this year, 11 per cent less than in the corresponding 1957 period.

Bookings during August were 226,000 tons, 53 per cent below the year-to-date high of 331,000 tons in July, but 23 per cent better than in August last year. Accumulated bookings during the first eight months were 1,820,000 tons, a rate of 227,000 tons monthly.

The backlog of work as of Aug. 1 amounted to 2,119,074 tons. Of this, 1,199,860 tons are scheduled for fabrication within the next four months.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1200 tons, state bridge work, Montgomery County, Pennsylvania, to Mayer Pollock, Pottstown, Pa.

590 tons, seven state bridges, Lackawanna County, Pennsylvania, to High Welding Co., Lancaster, Pa.; 1000 tons of additional bridgework in the county still pending.

200 tons, state bridge, Monroe-Northampton Counties, Pennsylvania, to Mayer Pollock, Pottstown, Pa.

180 tons, RCA factory building, Somerville, N. J., to Belmont Iron Works, Eddystone, Pa.

STRUCTURAL STEEL PENDING

6000 tons, powerplant, Ft. Peck, Mont.; bids to U. S. Engineer, Nov. 20.

3265 tons, superstructure, Scudders Falls Bridge over the Delaware River between Bucks County, Pennsylvania, and Mercer County, New Jersey, contract No. 2, bids to be opened by the New Jersey State Highway Department, Trenton, N. J., Oct. 28; also, 298 tons of reinforcing steel will be required.

410 tons, six grade separation structures, and pavement, Enfield, Conn.; Enfield Road Construction Co, Inc. and E. T. O'Neill & Son Construction Corp., Holyoke, Mass., low, joint contractors; also 600 tons, reinforcing bars; 350 tons, steel piles, and 615 tons, mat reinforcement.

866 tons, including miscellaneous, drydock No. 6, Puget Sound Navy Yard; bids to the Thirteenth Naval District in December.

800 tons, Montana high bridge, Superior County; general contract to Riedessel Construction Co. and Schye & Sullivan, White Sulphur Springs, joint low at $846,796; Pittsburgh-Des Moines Steel Co. reported low on the structural subcontract.

629 tons, state bridgework, Philadelphia, bids Oct. 17; 408 tons of reinforcing bars also required.

520 tons, three bridges and highway structures, Danbury, Conn.; W. J. Megin Inc., Naugatuck, Conn., low on the general contract.

475 tons, railroad bridge, West Hartford, Conn.; Charter Oak Construction Co., Hartford, low on the general contract; also, 220 tons of reinforcing bars.

395 tons, two I-beam bridges, Yarmouth, Maine; also 175 tons, reinforcing bars, and 65 tons, steel piles; bids in.

370 tons, state highway bridge, Winslow, Maine; bids in.

215 tons, angles, General Stores Supply Office, Navy, Philadelphia; bids Oct. 15.

195 tons, I-beams, high tensile; bids Oct. 10, Navy Purchasing Office, Washington, D. C.; also 70 tons of grade Hy-80 plates, same date.

194 tons, Montana State bridge, Shelby County; general contract to Schye & Sullivan, White Sulphur Springs, low at $631,693.

160 tons, including liner plate, Howard A. Hanson Dam; bids to the U. S. Engineer, Seattle, Nov. 21.

145 tons, Webb Road Bridge, Waterville, Maine; bids in.

135 tons, three single-span bridges, Barkhamsted-Granby, Conn.; Macdonald Construction Co., Newington, Conn., low on the general contract.

100 tons, including reinforcing bars, state highway bridge, Roxbury, Maine; bids in.

100 tons, Juneau, Alaska, high school; bids rejected; rebids late in November.

100 tons, housing project, Elmendorf Air Base, Alaska; Lease Construction Co., Seattle, low bidder.

REINFORCING BARS . . .

REINFORCING BARS PLACED

80 tons, school structure, Colfax, Wash., to the Union Iron Works, Spokane, Wash.

REINFORCING BARS PENDING

8510 tons, drydock No. 6, Puget Sound Navy Yard; bids to the Thirteenth Naval District in December.

7500 tons, powerplant, Ft. Peck, Mont.; bids to the U. S. Engineer, Nov. 20.

525 tons, outlet works, etc., Howard A. Hanson Dam; bids to the U. S. Engineer, Seattle, Nov. 21.

408 tons, state bridgework, Philadelphia, bids Oct. 17; also 629 tons of structural steel required.

298 tons, superstructure, Scudders Falls Bridge, over Delaware River between Bucks County, Pennsylvania, and Mercer County, New Jersey, contract No. 2 to be opened Oct. 28 by the New Jersey State Highway Department, Trenton, N. J.; 3265 tons of structural steel also will be required.

175 tons, two state bridges, Manchester, N. H., also 195 tons, steel piles; bids in.

175 tons, two bridges, Yarmouth, Maine; also 395 tons of structurals, and 65 tons of steel piles; bids in.

110 tons, state bridgework, Schuylkill County, Pennsylvania, bids Oct. 17.

100 tons, state highway bridge, Hopkinton, N. H.; bids in.

100 tons, including reinforcing bars, state highway bridge, Roxbury, Maine; bids in.

PLATES . . ..

PLATES PLACED

130 tons, special treatment, Navy Purchasing Office, Washington, D. C., to Lukens Steel Co., Coatesville, Pa.

PLATES PENDING

3050 tons, Z-piling, Puget Sound Navy Yard drydock No. 6; bids to the Thirteenth Naval District, Seattle, in December.

2390 tons, sheet steel piling, Puget Sound Navy Yard dock cofferdam; bids to the Thirteenth Naval District, Seattle, in December.

2185 tons, General Stores Supply, Navy, Philadelphia, bids Oct. 8.

1265 tons, General Stores Supply, Navy, Philadelphia, bids Oct. 6.

225 tons, U. S. Engineers, San Francisco.

PIPE . . .

CAST IRON PIPE PENDING

100 tons, 5500 ft of 4 and 6 in. pipe; bids to District No. 61, King County, Seattle, Oct. 2.

DISTRICT INGOT RATES

(Percentage of Capacity Engaged)

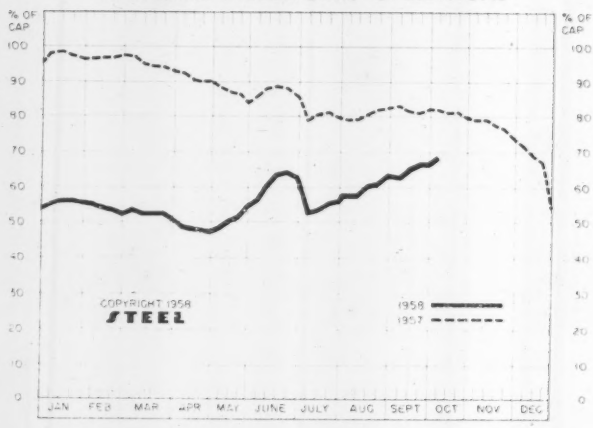
	Week Ended Oct. 5	Change	Same Week 1957	Same Week 1956
Pittsburgh	63.5	+ 2.5*	84.5	101.5
Chicago	77.5	— 1*	85	100.5
Eastern	66	0	86	100.5
Youngstown	54	0	75	101
Wheeling	75	+ 1.5	96.5	104
Cleveland	70.5	+ 2.5	87	107
Buffalo	58.5	0	100	107.5
Birmingham	54	0	72	95.5
Cincinnati	76	— 0.5*	78	91.5
St. Louis	91	+12.5	94.5	100
Detroit	78	+ 8.5*	98.5	101
Western	75	0	95	100
National Rate	68.5	+ 2	82	101.5

INGOT PRODUCTION‡

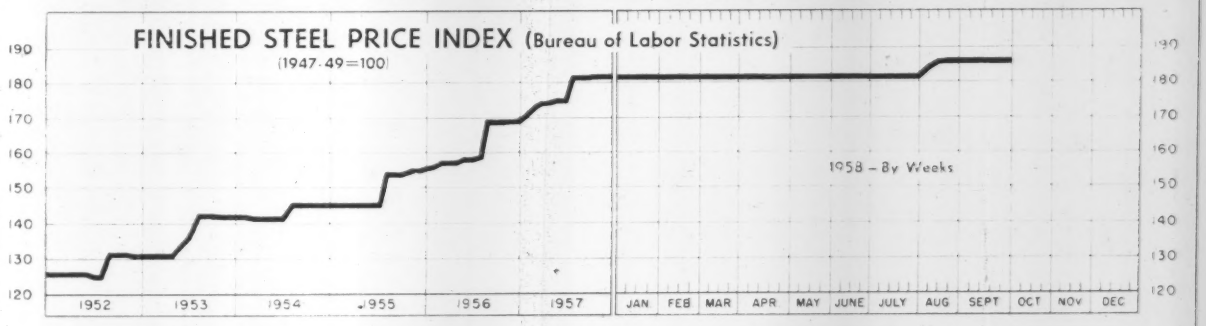
	Week Ended Oct. 5	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	115.2†	113.0	103.7	131.7
NET TONS (In thousands)	1,850†	1,816	1,666	2,115

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Sept. 30, 1958	Week Ago	Month Ago	Sept. Avg	Year Ago
186.6	186.6	186.5	186.6	181.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Sept. 30

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825	Bars, Reinforcing	6.385
Rails, Light, 40 lb	7.292	Bars, C.F., Carbon	10.710
Tie Plates	6.783	Bars, C.F., Alloy	14.125
Axles, Railway	10.175	Bars, C.F., Stainless, 302 (lb)	0.553
Wheels, Freight Car, 33 in. (per wheel)	62.000	Sheets, H.R., Carbon	6.350
Plates, Carbon	6.350	Sheets, C.R., Carbon	7.300
Structural Shapes	6.167	Sheets, Galvanized	8.545
Bars, Tool Steel, Carbon (lb)	0.560	Sheets, C.R., Stainless, 302 (lb)	0.688
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680	Sheets, Electrical	12.625
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400	Strip, C.R., Carbon	9.489
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895	Strip, C.R., Stainless, 430 (lb)	0.493
Bars, H.R., Alloy	10.775	Strip, H.R., Carbon	6.250
Bars, H.R., Stainless, 303 (lb)	0.525	Pipe, Black, Buttweld (100 ft)	20.525
Bars, H.R., Carbon	6.675	Pipe, Galv., Buttweld (100 ft)	23.975
		Pipe, Line (100 ft)	205.710
		Casing, Oil Well, Carbon (100 ft)	201.080
		Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200	Black Plate, Canmaking Quality (95 lb base box)	7.583
Tubing, Mechanical, Carbon (100 ft)	26.157	Wire, Drawn, Carbon	10.575
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608	Wire, Drawn, Stainless, 430 (lb)	0.653
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	9.783	Bale Ties (bundles)	7.967
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.483	Nails, Wire, 8d Common	9.828
		Wire, Barbed (80-rod spool)	8.719
		Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Oct. 1 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	246.65	246.65	246.65	239.15	189.38
Index in cents per lb	6.682	6.682	6.682	6.479	5.130

STEEL's ARITHMETICAL PRICE COMPOSITES*

Finished Steel, NT	$149.28	$149.28	$149.28	$146.03	$115.56
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	43.00	43.00	42.67	42.17	31.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Oct. 1 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.50	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Del.	5.30	5.30	5.30	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.975-4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45-5.95
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.475-5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.35-6.55
Tin plate (1.50 lb) box, Pitts.	$10.30	$10.30	$10.30	$10.30	$8.95

*Including 0.35c for special quality.

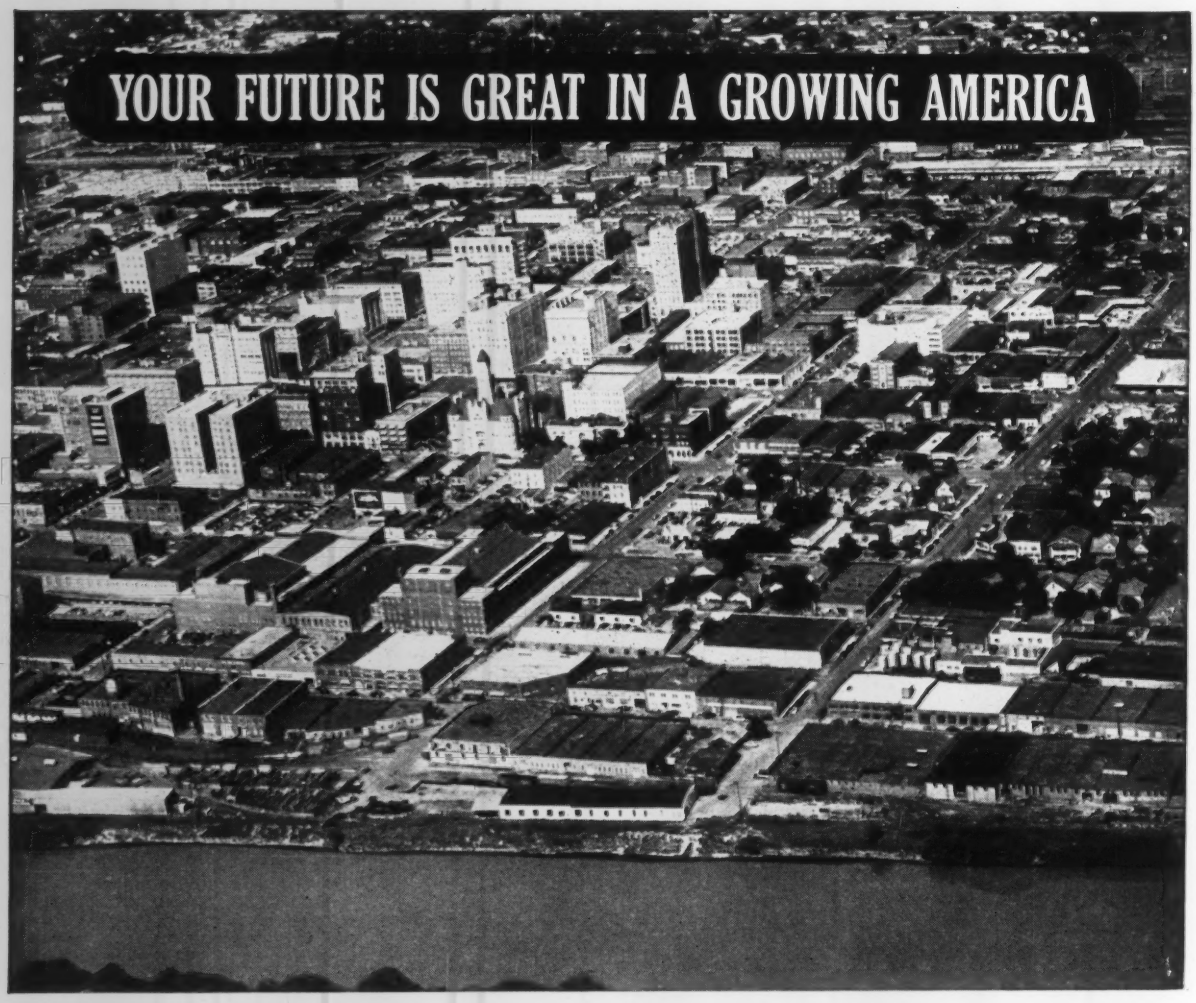
SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods $\frac{7}{32}$-$\frac{5}{8}$" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	Oct. 1 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry, Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry, deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry, Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton	245.00†	245.00†	245.00†	255.00†	200.00*

†74-76% Mn, Duquesne, Pa. *Etna, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$43.50	$43.50	$42.50	$42.50	$34.50
No. 1 Heavy Melt, E. Pa.	42.00	40.00	40.00	41.00	30.50
No. 1 Heavy Melt, Chicago	43.50	45.50	45.50	43.00	29.50
No. 1 Heavy Melt, Valley	43.50	43.50	43.50	40.50	34.50
No. 1 Heavy Melt, Cleve.	40.00	40.00	40.00	38.50	30.50
No. 1 Heavy Melt, Buffalo	34.50	34.50	34.50	41.50	35.50
Rails, Rerolling, Chicago	64.50	65.50	64.50	59.50	49.00
No. 1 Cast, Chicago	46.50	46.50	46.50	40.50	32.50

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	30.50	30.50	30.50	30.50	25.25



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What does this mean to you? It means greater opportunities than ever before—in all fields. Home construction is expected to double by 1975. Power companies plan to increase output 250% in the next 20 years to provide the power for scores of new labor-saving devices. Clothing suppliers predict a one-third increase in 7 years.

With 11,000 new citizen-consumers born every day, there's a new wave of opportunity coming.

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1. **More people . . .** Four million babies yearly. U. S. population has *doubled* in last 50 years! And our prosperity curve has always followed our population curve.
2. **More jobs . . .** Though employment in some areas has fallen off, there are *15 million* more jobs than in 1939—and there will be *22 million more* in 1975 than today.
3. **More income . . .** Family income after taxes is at an all-time high of $5300—is expected to pass $7000 by 1975.
4. **More production . . .** U. S. production *doubles* every 20 years. We will require millions more people to make, sell and distribute our products.
5. **More savings . . .** Individual savings are at highest level ever—*$340 billion*—a record amount available for spending.
6. **More research . . .** *$10 billion* spent each year will pay off in more jobs, better living, whole new industries.
7. **More needs . . .** In the next few years we will need *$500 billion* worth of schools, highways, homes, durable equipment. Meeting these needs will create new opportunities for everyone.

Add them up and you have the makings of another big upswing. Wise planners, builders and buyers will act *now* to get ready for it.

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(This space contributed as a public service by this magazine.)

Steel Prices

Mill prices as reported to STEEL, Oct. 1, cents per pound except as otherwise noted. *Changes shown in italics.* Code number following mill points indicates producing company. Key to producers, page 122; footnotes, page 124.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$76.00

INGOTS, Alloy (NT)
Detroit S11 .....$82.00
Economy,Pa. B14 .....82.00
Farrell,Pa. S3 .....82.00
Lowellville,O. S3 .....82.00
Midland Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
Sharon Pa S3 .....82.00

BILLETS, BLOOMS & SLABS
Carbon,Rerolling (NT)
Bartonville,Ill. K1 ....$82.00
Bessemer,Pa. U5 .....80.00
Buffalo R2 .....80.00
Clairton Pa. U5 .....80.00
Ensley,Ala. T2 .....80.00
Fairfield,Ala. T2 .....80.00
Fontana,Calif. K1 ....90.50
Gary,Ind. U5 .....80.00
Johnstown,Pa. B3 ....80.00
Lackawanna,N.Y. B2 ..80.00
Munhall,Pa. U5 .....80.00
Owensboro,Ky. G8 ....77.50
S Chicago,Ill. R2. U5 ..80.00
S.Duquesne,Pa. U5 ....80.00
Sterling,Ill. N15 .....80.00
Youngstown R2 .....80.00

Carbon, Forging (NT)
Bessemer,Pa. N5 ....$99.50
Buffalo R2 .....99.50
Canton,O R2 .....102.00
Clairton Pa. U5 .....99.50
Conshohocken,Pa. A3. 101.50
Ensley,Ala. T2 .....99.50
Fairfield,Ala T2 .....99.50
Farrell Pa S3 .....99.50
Fontana Calif K1 ....109.00
Gary,Ind U5 .....99.50
Geneva,Utah C11 .....99.50
Houston S5 .....104.50
Johnstown,Pa. B2 ....99.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 .....109.00
Midland Pa. C18 .....99.50
Munhall,Pa. U5 .....99.50
Owensboro,Ky. G8 ....96.00
Seattle B3 .....113.00
Sharon,Pa S3 .....99.50
S Chicago R2 U5, W14 99.50
S Duquesne Pa U5 ....99.50
S SanFrancisco B3 ..109.00
Warren,O C17 .....99.50

Alloy, Forging (NT)
Bethlehem Pa R2 ....$119.00
Bridgeport,Conn C32 .119.00
Buffalo R2 .....119.00
Canton,O R2 T7 ....119.00
Conshohocken,Pa. A3. 126.00
Detroit S11 .....119.00
Economy Pa B14 .....119.00
Farrell Pa S3 .....119.00
Fontana Calif K1 ....140.00
Gary,Ind. U5 .....119.00
Houston S5 .....124.00
Ind.Harbor,Ind. Y1 ...119.00
Johnstown,Pa. B2 ....119.00
Lackawanna,N.Y. B2 ..119.00
LosAngeles B3 .....139.00
Owensboro,Ky G8 ....114.00
Lowellville,O. S3 ....119.00
Massillon,O R2 .....119.00
Midland Pa C18 .....119.00
Munhall Pa U5 .....119.00
Sharon,Pa. S3 .....119.00
S Chicago R2,U5,W14.119.00
S Duquesne,Pa. U5 ...119.00
Struthers,O. Y1 .....119.00
Warren,O. C17 .....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$122.50
Canton,O R2 .....125.00
Cleveland R2 .....122.50
Gary Ind. U5 .....122.50
S Chicago,Ill R2. W14 122.50
S Duquesne,Pa. U5 ..122.50
Warren,O. C17 .....122.50

SKELP
Aliquippa,Pa. J5 .....5.05
Munhall,Pa. U5 .....5.05
Pittsburgh J5 .....5.05
Warren,O R2 .....5.05
Youngstown R2, U5 ....5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 .....6.40
Alton,Ill L1 .....6.60
Bartonville,Ill K4 .....6.50
Buffalo W12 .....6.40
Cleveland A7 .....6.40
Donora,Pa. A7 .....6.40
Fairfield,Ala T2 .....6.40
Houston S5 .....6.65
IndianaHarbor,Ind. Y1..6.40
Johnstown,Pa. B2 .....6.40
Joliet,Ill A7 .....6.40
KansasCity,Mo S5 .....6.65
Kokomo,Ind. C16 .....6.50
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 .....6.40
N.Tonawanda,N.Y. B11.6.40
Pittsburg Calif. C11 ....7.20
Portsmouth,O. P12 ....6.40
Roebling,N.J R5 .....6.50
S.Chicago,Ill. R2. W14 ..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 .....6.50
Struthers,O. Y1 .....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ..5.50
Atlanta A11 .....5.70
Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa. B2 .....5.55
Birmingham C15 .....5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Houston S5 .....5.60
Ind.Harbor,Ind. I-2, Y1.5.50
Johnstown,Pa. B2 .....5.55
Joliet,Ill. P22 .....5.50
KansasCity,Mo. S5 .....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 .....5.50
Niles,Calif. P1 .....6.25
Phoenixville,Pa. P4 ....5.55
Portland,Oreg. O4 .....6.25
Seattle B3 .....6.25
S Chicago,Ill. U5, W14..5.50
S SanFrancisco B3 ....6.15
Sterling,Ill N15 .....5.50
Torrance Calif. C11 ....6.20
Weirton,W Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.50
Fontana Calif. K1 .....6.45
IndianaHarbor,Ind. I-2..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa U5 .....5.50
Phoenixville,Pa. P4 ....5.55
S Chicago,Ill. U5 .....5.50
Weirton,W Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....6.90
Munhall,Pa. U5 .....6.80
S.Chicago,Ill. U5, W14..6.80

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....8.05
Bessemer,Ala. T2 .....8.05
Bethlehem,Pa. B2 .....8.10
Clairton,Pa. U5 .....8.05
Fairfield,Ala. T2 .....8.05
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.05
Geneva,Utah C11 .....8.05
Houston S5 .....8.15
Ind.Harbor,Ind. I-2, Y1.8.05
Johnstown,Pa. B2 .....8.10
KansasCity,Mo. S5 .....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 .....8.75
Munhall,Pa. U5 .....8.05
Seattle B3 .....8.80
S Chicago,Ill. U5, W14..8.05
S SanFrancisco B3 ....8.70
Struthers,O. Y1 .....8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 .....8.05
S.Chicago,Ill. U5 .....8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa U5 .....5.50
S Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 .....6.50
S Chicago,Ill. I-2. U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..5.30
Aliquippa,Pa. J5 .....5.30
Ashland,Ky.(15) A10 ...5.30
Atlanta A11 .....5.50
Bessemer,Ala. T2 .....5.30
Clairton,Pa. U5 .....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 .....5.30
Coatesville,Pa. L7 .....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 .....5.30
Fairfield,Ala. T2 .....5.30
Farrell,Pa. S3 .....5.30
Fontana,Calif.(30) K1 ...6.10
Gary,Ind. U5 .....5.30
Geneva,Utah C11 .....5.30
GraniteCity,Ill. G4 ....5.40
Harrisburg,Pa. P4 .....5.30
Houston S5 .....5.40
Ind.Harbor,Ind. I-2, Y1.5.30
Johnstown,Pa. B2 .....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O E6 .....5.30
Minnequa,Colo. C10 ....6.15
Munhall,Pa. U5 .....5.30
Newport,Ky. A2 .....5.30
Pittsburgh J5 .....5.30
Riverdale,Ill. A1 .....5.30
Seattle B3 .....6.20
Sharon,Pa. S3 .....5.30
S.Chicago Ill. U5, W14 ..5.30
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 .....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 .....5.30
Youngstown U5, Y1 ....5.30
Youngstown(27) R2 .....5.30

PLATES, Carbon Abras. Resist.
Claymont,Del. C22 .... 6.75
Fontana,Calif. K1 .....7.85
Geneva,Utah C11 .....7.05
Houston S5 .....7.15
Johnstown,Pa. B2 .....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 .....13.15

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.95
Ashland,Ky. A10 .....7.95
Bessemer,Ala. T2 .....7.95
Clairton,Pa. U5 .....7.95
Claymont,Del. C22 .....7.95
Cleveland J5, R2 .....7.95
Coatesville Pa. L7 .....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 .....7.95
Ecorse,Mich. G5 .....7.95
Fairfield,Ala. T2 .....7.95
Farrell,Pa. S3 .....7.95
Fontana,Calif.(30) K1 ...8.75
Gary,Ind. U5 .....7.95
Geneva,Utah C11 .....7.95
Houston S5 .....8.05
Ind.Harbor,Ind. I-2, Y1.7.95
Johnstown,Pa. B2 .....7.95
Munhall,Pa. U5 .....7.95
Pittsburgh J5 .....7.95
Seattle B3 .....8.85
Sharon,Pa. S3 .....7.95
S Chicago,Ill U5, W14..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O R2 .....7.95
Youngstown U5, Y1 ....7.95

PLATES, ALLOY
Aliquippa,Pa. J5 .....7.50
Claymont,Del. C22 .....7.50
Coatesville,Pa. L17 ....7.50
Economy,Pa. B14 .....7.50
Farrell,Pa. S3 .....7.50
Fontana,Calif. K1 .....8.30
Gary,Ind. U5 .....7.50
Houston S5 .....7.60
Ind.Harbor,Ind. Y1 ....7.50
Johnstown,Pa. B2 .....7.50
Lowellville,O. S3 .....7.50
Munhall,Pa. U5 .....7.50
Newport,Ky. A2 .....7.50
Pittsburgh J5 .....7.50
Seattle B3 .....8.40
Sharon,Pa. S3 .....7.50
S Chicago,Ill. U5, W14..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 .....7.50

FLOOR PLATES
Cleveland J5 .....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ...6.375
Munhall,Pa. U5 .....6.375
S Chicago,Ill. U5 .....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 .....6.05
Warren,O. c.l. R2 .....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala City,Ala.(9) R2 ..5.675
Aliquippa,Pa.(9) J5 ..5.675
Alton,Ill. L1 .....5.875
Atlanta(9) A11 .....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ..5.675
Buffalo(9) R2 .....5.675
Canton,O.(23) R2 .....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 .....5.675
Ecorse,Mich.(9) G5 ...5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala.(9) T2 ...5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1. 6.375
Gary,Ind.(9) U5 .....5.675
Houston(9) S5 .....5.925
Ind.Harbor (9) I-2, Y1 5.675
Johnstown,Pa.(9) B2 ..5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. (9) S5..5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 .....6.375
Massillon,O.(23) R2 ....6.15
Midland,Pa.(23) C18 ..6.025
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
N.Tonawanda,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ..5.425
Pittsburgh,Calif.(9) C11.6.375
Pittsburgh(9) J5 .....5.675
Portland,Oreg. O4 .....6.425
Riverdale Ill.(9) A1 ..5.675
Seattle B3, N14 .....6.425
S Chicago(9)R2 U5,W14 5.675
S.Duquesne,Pa.(9) U5. 5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15. 5.675
Sterling Ill (9) N15 ...5.775
Struthers,O.(9) Y1 ....5.675
Tonawanda,N.Y. B12 ..5.675
Torrance,Calif.(9) C11.6.375
Warren,O. C17 .....6.025
Youngstown(9) R2, U5.5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.725
Bethlehem,Pa. B2 .....6.725
Bridgeport,Conn. C32 ..6.80
Buffalo R2 .....6.725
Canton,O R2, T7 .....6.725
Clairton,Pa. U5 .....6.725
Detroit S11 .....6.725
Economy,Pa. B14 .....6.725
Ecorse Mich. G5 .....6.725
Fairless,Pa. U5 .....6.875
Farrell,Pa. S3 .....6.725
Fontana,Calif. K1 .....7.775
Gary,Ind. U5 .....6.725
Houston S5 .....6.975
Ind.Harbor,Ind. I-2, Y1.6.725
Johnstown,Pa. B2 .....6.725
KansasCity,Mo S5 .....6.975
Lackawanna,N.Y. B2 ..6.725
Lowellville,O. S3 .....6.725
LosAngeles B3 .....7.775
Mass.llon,O. R2 .....6.725
Midland,Pa. C18 .....6.725
Owensboro,Ky G8 .....6.475
Pittsburgh J5 .....6.725
Sharon,Pa. S3 .....6.725
S Chicago R2, U5, W14.6.725
S Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 .....6.725
Warren,O. C17 .....6.725
Youngstown U5 .....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa Pa. J5 .....8.30
Bessemer,Ala. T2 .....8.30
Bethlehem,Pa. B2 .....8.30
Clairton Pa. U5 .....8.30
Cleveland R2 .....8.30
Ecorse Mich. G5 .....8.30
Fairfield,Ala. T2 .....8.30
Fontana,Calif. K1 .....9.00
Gary,Ind U5 .....8.30
Houston S5 .....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 .....8.30
KansasCity,Mo S5 .....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 .....9.00
Pittsburgh J5 .....8.30
Seattle B3 .....9.05
S.Chicago,Ill. R2, W14..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 .....9.05
Struthers,O. Y1 .....8.30
Youngstown U5 .....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 .....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 .....5.775
Sterling,Ill.(1) N15 ...5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.675
Atlanta A11 .....5.875
Joliet,Ill. P22 .....5.675
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 .....6.425
SanFrancisco S7 .....6.52
Seattle B3 .....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
KansasCity,Mo. S5 .....7.05
Pittsburgh J5 .....6.80
Youngstown U5 .....6.80

BARS, C.F. Leaded (Including leaded extra)
Carbon
LosAngeles P2, S30 ..11.75*
Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12..10.175
Camden,N.J. P13 ....10.35
Chicago W18 .....10.175
Elyria,O. W9 .....10.175
Monaca,Pa. S17 .....10.175
Newark,N.J. W18 ....10.35
SpringCity,Pa. K3 ....10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....7.65
BeaverFalls,Pa. M12,R2.7.65
Birmingham C15 .....8.25
Buffalo B5 .....7.70
Camden,N.J. P13 .....8.10
Carnegie,Pa. C12 .....7.65
Chicago W18 .....7.65
Cleveland A7, C20 ....7.65
Detroit B5, P17 .....7.85
Detroit S11 .....7.65
Donora,Pa. A7 .....7.65
Elyria,O. W9 .....7.65
FranklinPark,Ill. N5 ....7.65
Gary,Ind. R2 .....7.65
GreenBay,Wis F7 .....7.65
Hammond,Ind. J5, L2 ..7.65
Hartford,Conn. R2 .....8.15
Harvey,Ill B5 .....7.65
LosAngeles(49) S30 ....9.10
LosAngeles(49) P2, R2.9.10
Mansfield,Mass B2 ....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 .....7.65
Monaca,Pa. S17 .....7.65
Newark,N.J. W18 .....8.10
NewCastle,Pa.(17) B4 ..7.65
Pittsburgh J5 .....7.65
Plymouth Mich. P5 ....7.90
Putnam,Conn. W18 ....8.20
Readville,Mass. C14 ....8.20
S.Chicago,Ill. W14 ....7.65
SpringCity,Pa. K3 ....8.10
Struthers,O. Y1 .....7.65
Warren,O. C17 .....7.65
Willimantic,Conn. J5 ...8.15
Waukegan,Ill. A7 .....7.65
Youngstown F3, Y1 ...7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19.6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ...9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 ... 9.025
Bridgeport,Conn. C32 . 9.175
Buffalo B5 .....9.025
Camden,N.J. P13 ..... 9.20
Canton,O. T7 .....9.025
Carnegie,Pa. C12 .....9.025
Chicago W18 .....9.025
Cleveland A7, C20 ....9.025
Detroit B5, P17 .....9.225
Detroit S11 .....9.025
Donora,Pa. A7 .....9.025
Elyria,O. W9 .....9.025
FranklinPark,Ill. N5 ..9.025
Gary,Ind. R2 .....9.025
GreenBay,Wis. F7 .....9.025
Hammond,Ind. J5, L2. .9.025
Hartford,Conn. R2 ....9.325
Harvey,Ill B5 .....9.025
Lackawanna,N.Y. B2 ..9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass B5 ....9.325
Massillon,O R2, R8 ...9.025
Midland,Pa C18 .....9.025
Monaca,Pa. S17 .....9.025
Newark,N.J W18 ..... 9.20
Plymouth Mich P5 ....9.225
S.Chicago,Ill. W14 ....9.025
SpringCity,Pa. K3 .....9.20
Struthers,O. Y1 .....9.025
Warren,O. C17 .....9.025
Waukegan,Ill. A7 .....9.025
Willimantic,Conn. J5 ..9.325
Worcester,Mass. A7 ...9.325
Youngstown F3, Y1 ...9.025

BARS, Reinforcing (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 .....5.675
Birmingham C15 .....5.675
Buffalo R2 .....5.675
Cleveland R2 .....5.675
Ecorse,Mich. G5 .....5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 .....5.675
Fairless,Pa. U5 .....5.825
Fontana,Calif. K1 .....6.375
Ft.Worth,Tex.(4)(26)T4 6.125
Gary,Ind. U5 .....5.675
Houston S5 .....5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 .....5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo. S5 ....5.925
Kokomo,Ind. C16 .....5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 .....6.375
Madison,Ill. L1 .....5.625
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ...6.125
Niles,Calif. P1 .....6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 .....6.425
S.Chicago,Ill. R2, W14 5.675
S.Duquesne,Pa. U5 ....5.675
S.SanFrancisco B3 ....6.425
SparrowsPoint,Md. B2 ..5.675
Sterling,Ill.(1) N15 ....5.675
Sterling,Ill. N15 .....5.775
Struthers,O. Y1 .....5.675
Tonawanda,N.Y. B12 ...6.10
Torrance,Calif. C11 ..6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing (Fabricated; to Consumers)

Baltimore B2 .....7.42
Boston B2, U8 .....8.15
Chicago U8 .....7.41
Cleveland U8 .....7.39
Houston S5 .....7.60
Johnstown,Pa. B2 .....7.33
KansasCity,Mo. S5 ....7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 .....6.70
Newark N.J. U8 .....7.80
Philadelphia U8 .....7.63
Pittsburgh J5, U8 .....7.35
SandSprings,Okla. S5 ...7.60
Seattle B3, N14 .....7.95
SparrowsPt.,Md. B2 ...7.33
St.Paul U8 .....8.17
Williamsport,Pa. S19 ...7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 14.45
Economy,Pa.(D.R.)B14 18.00
Economy(Staybolt)B14 18.45

RAIL STEEL BARS

ChicagoHts.(3) C2, I-2. 5.575
ChicagoHts.(4)(44) I-2. 5.675
ChicagoHts.(4) C2 ....5.675
Franklin,Pa.(3) F5 ....5.575
Franklin,Pa.(4) F5 ....5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 .....5.575
Tonawanda(3) B12 ....5.575
Tonawanda(4) B12 ....6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 .....5.10
Aliquippa,Pa. J5 .....5.10
Ashland Ky.(8) A10 ...5.10
Cleveland J5, R2 .....5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 .....5.10
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....5.10
Fairless Pa. U5 .....5.15
Farrell,Pa. S3 .....5.10
Fontana,Calif. K1 ....5.825
Gary,Ind. U5 .....5.10
Geneva,Utah C11 .....5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1.5.10
Irvin,Pa. U5 .....5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 .....5.10
Munhall,Pa. U5 .....5.10
Newport,Ky. A2 .....5.10
Niles,O. M21, S3 .....5.10
Pittsburg,Calif. C11 ...5.80
Pittsburgh J5 .....5.10
Portsmouth,O. P12 .....5.10
Riverdale,Ill. A1 .....5.10
Sharon,Pa. S3 .....5.10
S.Chicago,Ill., U5, W14 .5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ...5.10
Warren,O. R2 .....5.10
Weirton,W.Va. W6 ....5.10
Youngstown U5, Y1 ....5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21 ..... 6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 ..... 8.40
Ind.Harbor,Ind. Y1 .....8.10
Irvin,Pa. U5 .....8.40
Munhall,Pa. U5 .....8.40
Newport,Ky. A2 .....8.40
Youngstown U5 .....8.40
Youngstown Y1 .....8.10

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....7.525
Ashland,Ky. A10 .....7.525
Cleveland J5, R2 .....7.525
Conshohocken,Pa. A3 ..7.975
Ecorse,Mich. G5 .....7.525
Fairfield,Ala. T2 .....7.525
Fairless,Pa. U5 .....7.975
Farrell,Pa. S3 .....7.525
Fontana,Calif. K1 .....8.25
Gary,Ind. U5 .....7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 .....7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 .....7.525
Pittsburgh J5 .....7.525
S.Chicago,Ill. U5, W14 .7.525
Sharon,Pa. S3 .....7.525
SparrowsPoint(36) B2..7.525
Warren,O. R2 .....7.525
Weirton,W.Va. W6 ....7.525
Youngstown U5, Y1 ...7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ....5.35
Cleveland R2 .....5.875
Warren,O. R2 .....5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 ..... 7.05
Middletown,O. A10 ...6.775
Warren,O. R2 ..... 7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 .....6.275
Aliquippa,Pa. J5 .....6.275
Cleveland J5, R2 .....6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 .....6.275
Ecorse,Mich. G5 .....6.275
Fairfield,Ala. T2 .....6.275
Fairless,Pa. U5 .....6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 .....7.40
Gary,Ind. U5 .....6.275
GraniteCity,Ill. G4 ....6.375
Ind.Harbor,Ind. I-2, Y1.6.275
Irvin,Pa. U5 .....6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 .....6.275
Middletown,O. A10 ....6.275
Newport,Ky. A2 .....6.275
Pittsburg,Calif. C11 ...7.225
Pittsburgh J5 .....6.275
Portsmouth,O. P12 .....6.275
SparrowsPoint,Md. B2..6.275
Steubenville,O. W10 ..6.275
Warren,O. R2 .....6.275
Weirton,W.Va. W6 ....6.275
Yorkville,O. W10 .....6.275
Youngstown Y1 .....6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 .....9.275
Cleveland J5, R2 .....9.275
Ecorse,Mich. G5 .....9.275
Fairless,Pa. U5 .....9.325
Fontana,Calif. K1 .....10.40
Gary,Ind. U5 .....9.275
Ind.Harbor,Ind. I-2,Y1.9.275
Irvin,Pa. U5 .....9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 .....9.275
SparrowsPoint(38) B2..9.275
Warren,O. R2 .....9.275
Weirton,W.Va. W6 ....9.275
Youngstown Y1 .....9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ala.City,Ala. R2	7.225	....
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
SparrowsPt. B2	7.225	....
Pittsburgh J5	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ...7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 .6.875‡
Ashland,Ky. A10 ....6.875†
Canton O. R2 .....6.875‡
Dover,O. E6 .....6.875†
Fairfield,Ala. T2 ....6.875†
Gary,Ind. U5 .....6.875†
GraniteCity,Ill. G4 ...6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 .....6.875†
Kokomo,Ind. C16 .....6.975‡
MartinsFerry,O. W10 .6.875*
Middletown,O. A10 ...6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 .....6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 .....6.875†
Weirton,W.Va. W6 ....6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 .....7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 .....10.025
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 .....10.125

SHEETS, Galvannealed Steel

Canton,O. R2 .....7.275
Irvin,Pa. U5 .....7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland Ky. A10 .....7.125
Middletown,O. A10 ....7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 .....7.65
Niles,O.(28) R2 .....7.65
Youngstown J5 .....7.50
Weirton,W.Va. W6 ....7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 .....6.775
Cleveland R2 .....6.775
Fairfield,Ala. T2 .....6.775
Gary,Ind. U5 .....6.775
GraniteCity,Ill. G4 ....6.875
Ind.Harbor,Ind. I-2,Y1.6.775
Irvin,Pa. U5 .....6.775
Middletown,O. A10 ....6.775
Niles,O. M21, S3 .....6.775
Youngstown Y1 .....6.775

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ...8.70
Ind.Harbor,Ind. I-2 ....8.70
Mansfield O. E6 .....8.70
Warren,O. R2 .....8.70
Yorkville,O. W10 .....8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 .....7.225
Mansfield,O. E6 .....7.225
Middletown O. A10 ....7.225
Niles,O. M21, S3 .....7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N. Eng.

D2 Detroit Steel Corp.
D3 Dearborn Div., Sharon Steel Corp.
D4 Disston Div., H. K Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co.Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S42 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co

W1 Wallace Barnes Steel Div., Associated Spring Corp.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland,Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	5.825
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackawanna,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
LosAngeles C1	8.60
Minnequa,Colo. C10	6.20
Riverdale,Ill. A1	5.10
SanFrancisco S7	6.60
Seattle(25) B3	6.10
Seattle N14	6.60
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.10
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	8.10
KansasCity,Mo. S5	8.65
LosAngeles B3	9.60
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2, S3	8.40
S.Chicago,Ill. W14	8.40
Youngstown U5	8.40
Youngstown Y1	8.10

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10	7.575
Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn,Mich. D3	7.425
Detroit D2, M1, P20	7.425
Dover,O. G6	7.425
Ecorse,Mich. G5	7.15
Evanston,Ill. M22	7.525
Farrell,Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.20
FranklinPark,Ill. T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles J5	9.325
LosAngeles C1	9.30
NewBedford,Mass. R10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.495
Pawtucket,R.I. R3	7.975
Pawtucket,R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(32) R6	7.425
Sharon,Pa. S3	7.425
Trenton,N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.05
Cleveland A7	15.05
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.05
Indianapolis S41	15.70
Lowellville,O. S3	15.55
Pawtucket,R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass. A7	15.35
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn,Mich. D3	10.80
Dover,O. G6	10.80
Ecorse,Mich. G5	10.50
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. D3	9.05	10.50	12.70	....	....
Detroit D2	9.05	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.50	12.60	15.60	....
FranklinPark,Ill. T6	9.05	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis J5	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles J5	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn. D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.05	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown J5	8.95	10.40	12.60	15.60‡	18.55

Spring Steel (Tempered)	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol,Conn. W1	18.85	22.95	27.80
Buffalo W12	18.25	....	....
Fostoria,O. S1	19.05	22.15	....
FranklinPark,Ill. T6	19.20	23.30	28.15
Harrison,N.J. C18	18.85	22.95	27.80
NewYork W3	18.85	22.95	27.80
Palmer,Mass. W12	18.85	....	....
Trenton,N.J. R5	18.85	22.95	27.80
Worcester,Mass. A7, T6	18.85	22.95	27.80
Youngstown J5	18.45	22.30	26.65

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$8.75	$9.00	$9.40
Fairfield,Ala. T2	8.85	9.10	9.50
Fairless,Pa. U5	8.85	9.10	9.50
Fontana,Calif. K1	9.50	9.75	10.15
Gary,Ind. U5	8.75	9.00	9.40
GraniteCity,Ill. G4	8.85	9.10	9.50
IndianaHarbor,Ind. I-2, Y1	8.75	9.00	9.40
Irvin,Pa. U5	8.75	9.00	9.40
Niles,O. R2	8.75	9.00	9.40
Pittsburg,Calif. C11	9.50	9.75	10.15
SparrowsPoint,Md. B2	8.85	9.10	9.50
Yorkville,O. W10	8.75	9.00	9.40

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	7.725	7.925	....
Niles,O. R2	7.725	7.925	8.125

TIN PLATE, American	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$10.05	$10.30
Fairfield,Ala. T2	10.15	10.40
Fairless,Pa. U5	10.15	10.40
Fontana,Calif. K1	10.80	11.05
Gary,Ind. U5	10.05	10.30
Ind.Harb. Y1	10.05	10.30
Pitts.,Calif. C11	10.80	11.05
Sp.Pt.,Md. B2	10.15	10.40
Weirton,W.Va. W6	10.05	10.30
Yorkville,O. W10	10.05	10.30

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$7.85
Fairfield,Ala. T2	7.95
Fairless,Pa. U5	7.95
Fontana,Calif. K1	8.60
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. I-2, Y1	7.85
Irvin,Pa. U5	7.85
Niles,O. R2	7.85
Pittsburg,Calif. C11	8.60
SparrowsPoint,Md. B2	7.95
Weirton,W.Va. W6	7.85
Yorkville,O. W10	7.85

HOLLOWARE ENAMELING Black Plate (29 Gage)	
Aliquippa,Pa. J5	7.50
Gary,Ind. U5	7.50
GraniteCity,Ill. G4	7.60
Ind.Harbor,Ind. Y1	7.50
Irvin,Pa. U5	7.50
Yorkville,O. W10	7.50

MANUFACTURING TERNES (Special Coated, Base Box)	
Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)	
Gary,Ind. U5	$11.25

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

Weirton,W.Va. W6	10.80
Youngstown Y1	10.80

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.425
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.975
Youngstown J5	7.15*

*Plus galvanizing extras.

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10

SHEETS (22 Ga., coils & cut lengths) Fully processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.40	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed. semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. M8	8.10
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	8.10
Houston S5	8.25
Jacksonville, Fla. M8	8.35
Johnstown,Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittsburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPoint,Md. B2	8.10
Sterling,Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.00

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	*12.65*
Donora,Pa. A7	*12.65*
Duluth A7	*12.65*
Johnstown,Pa. B2	13.40
Minnequa,Colo. C10	13.525
Monessen,Pa. P16	12.65
Monessen,Pa. P7	13.40
Muncie,Ind. I-7	13.60
NewHaven,Conn. A7	*12.95*
Palmer,Mass. W12	13.70
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	13.70
SparrowsPt.,Md. B2	13.50
Struthers,O. Y1	12.65
Trenton,N.J. A7	*12.95*
Waukegan,Ill. A7	*12.65*
Worcester,Mass. A7	*12.95*

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.25
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville,Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Wor'ster,Mass.A7,J4,T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	16.50
Bartonville Ill. K4	16.40
Chicago W13	16.30
Cleveland A7	16.30
Crawfordsville,Ind. M8	16.40
Fostoria,O. S1	16.30
Houston S5	15.85
Jacksonville,Fla. M8	16.65
Johnstown,Pa. B2	16.30
KansasCity,Mo. S5	15.85
Kokomo,Ind. C16	16.30
Minnequa,Colo. C10	16.55
Monessen,Pa. P16	15.60
Muncie,Ind. I-7	16.50
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan,Ill. A7	16.30
Worcester,Mass. A7, J6	16.60

WIRE, Tire Bead

Bartonville,Ill. K4	17.15
Monessen,Pa. P16	16.55
Roebling,N.J. R5	17.65

ROPE WIRE (A)

Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	12.75
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	12.75
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Cold-Rolled Flat

Anderson Ind G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	11.65
Chicago W13	*12.35*
Cleveland A7	*12.35*
Crawfordsville,Ind. M8	11.65
Dover O G6	12.35
Farrell Pa S3	11.65
Fostoria O S1	12.35
FranklinPark Ill T6	12.45
Kokomo Ind C16	11.65
Massillon,O R8	*12.35*
Milwaukee C23	12.55
Monessen Pa P7 P16	11.65
Palmer,Mass W12	11.95
Pawtucket R I N8	11.95
Philadelphia P24	12.65
Riverdale,Ill A1	12.45
Rome,N Y R6	11.65
Sharon Pa S3	11.65
Trenton N J R5	12.65
Warren O R9	11.65
Worcester,Mass. A7	*12.65*
Worcester Mass T6	12.65

NAILS

Stock	Col.
Alabama City,Ala R2	173
Aliquippa Pa J5	173
Atlanta A11	175
Bartonville Ill K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville Ind. M8	175
Donora Pa A7	173
Duluth A7	173
Fairfield Ala T2	173
Houston S5	178
Jacksonville Fla M8	175
Johnstown Pa B2	173
Joliet Ill A7	173
KansasCity,Mo S5	178
Kokomo Ind C16	175
Minnequa Colo C10	178
Monessen Pa P7	173
Pittsburg Calif C11	192
Rankin Pa A7	173
S Chicago Ill R2	173
SparrowsPt Md B2	175
Sterling Ill (7) N15	175
Worcester Mass A7	179

(To Wholesalers, per cwt)

Galveston Tex D7	$9.10

NAILS, Cut (100 lb keg)
To Dealers (33)

Wheeling W Va W10	$9.80

POLISHED STAPLES

	Col.
Alabama City,Ala R2	175
Aliquippa Pa J5	175
Atlanta A11	177
Bartonville Ill K4	177
Crawfordsville Ind. M8	177
Donora Pa A7	175
Duluth A7	175
Fairfield,Ala. T2	175
Houston S5	180
Jacksonville Fla. M8	177
Johnstown Pa B2	175
Joliet Ill A7	175
KansasCity,Mo S5	180
Kokomo Ind C16	177
Minnequa Colo C10	180
Pittsburg Calif C11	191
Rankin Pa A7	175
S Chicago Ill R2	175
SparrowsPt Md B2	177
Sterling Ill (7) N15	175
Worcester Mass A7	181

TIE WIRE, Automatic Baler

(14½ Ga Iiper 97 lb Net Box)

Coil No. 3150	
Alabama City,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville Ind. M8	10.36
Donora Pa A7	10.26
Duluth A7	10.26
Fairfield Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa B2	10.26
Joliet Ill A7	10.26
KansasCity,Mo S5	10.51
Kokomo Ind C16	10.36
LosAngeles R3	11.05
Minnequa Colo C10	10.51
Pittsburg Calif C11	11.04
S Chicago Ill R2	10.26
S SanFrancisco C10	11.04
SparrowsPt Md B2	10.36
Sterling Ill (3) N15	10.36

Coil No. 6500 Stand	
Alabama City,Ala R2	$10.60
Atlanta A11	10.70
Bartonville Ill K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville Ind. M8	10.70
Donora Pa A7	10.60
Duluth A7	10.60
Fairfield Ala T2	10.60
Houston S5	10.85
Jacksonville Fla. M8	10.70
Johnstown,Pa B2	10.60
Joliet,Ill A7	10.60
KansasCity,Mo S5	10.85
Kokomo,Ind C16	10.70
LosAngeles B3	11.10
Minnequa Colo C10	10.85
Pittsburg Calif C11	11.15
S Chicago Ill R2	10.70
S SanFrancisco C10	11.15
SparrowsPt Md B2	10.70
Sterling Ill (3) N15	10.70

Coil No 6500 Interim	
AlabamaCity,Ala R2	$10.65
Atlanta A11	10.75
Bartonville Ill K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora Pa A7	10.65
Duluth A7	10.65
Fairfield Ala T2	10.65
Houston S5	10.90
Jacksonville Fla M8	10.75
Johnstown Pa B2	10.65
Joliet Ill A7	10.65
KansasCity,Mo S5	10.90
Kokomo Ind C16	10.75
Los Angeles R3	11.15
Minnequa Colo C10	10.90
Pittsburg Calif C11	11.15
S Chicago Ill R2	10.65
S SanFrancisco C10	11.15
SparrowsPt Md B2	10.75
Sterling Ill (3) N15	10.75

BALE TIES, Single Loop

	Col
AlabamaCity,Ala R2	212
Atlanta A11	211
Bartonville Ill K4	211
Crawfordsville Ind. M8	211
Donora Pa A7	212
Duluth A7	212
Fairfield,Ala T2	212
Houston S5	217
Jacksonville Fla. M8	211
Joliet Ill A7	212
KansasCity,Mo S5	217
Kokomo Ind C16	211
Minnequa Colo C10	217
Pittsburg Calif C11	236
S SanFrancisco C10	236
SparrowsPt Md B2	211
Sterling Ill (7) N15	214

FENCE POSTS

Birmingham C15	172
Chicago Hts.,Ill C2, I-2	172
Duluth A7	172
Franklin Pa. F5	172
Johnstown Pa B2	172
Marion O P11	172
Minnequa Colo C10	177
Sterling Ill (3) N15	172
Tonawanda,N Y. B12	172

WIRE, Barbed

	Col
Alabama City,Ala. R2	193**
Aliquippa Pa J5	180§
Atlanta A11	196§
Bartonville Ill K4	198
Crawfordsville Ind. M8	198
Donora Pa A7	193†
Duluth A7	193†
Fairfield,Ala T2	193†
Houston S5	198**
Jacksonville Fla M8	198
Johnstown Pa B2	196§
Joliet Ill A7	193†
KansasCity,Mo S5	198**
Kokomo Ind C16	195†
Minnequa Colo C10	198**
Monessen Pa P7	196§
Pittsburg Calif C11	213†
S SanFrancisco C10	213*
SparrowsPoint,Md B2	198§
Sterling Ill (7) N15	198††

WOVEN FENCE, 9-15 Go Col

Ala City,Ala R2	187**
Aliquippa Pa 9-14½ga. J5	190§
Atlanta A11	192§
Bartonville Ill K4	192
Crawfordsville Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala T2	187†
Houston S5	192**
Jacksonville Fla M8	192
Johnstown,Pa.(43) B2	190§
Joliet Ill A7	187†
KansasCity,Mo S5	192**
Kokomo Ind C16	189†
Minnequa Colo C10	192**
Pittsburg Calif C11	210†
Rankin Pa A7	187†
S Chicago Ill R2	187**
Sterling,Ill.(7) N15	192††

	An'ld	Galv.
WIRE (16 gage)	**Stone**	**Stone**
Ala City,Ala R2	17.85	19.40**
Aliquippa Pa J5	17.15	18.95
Bartonville Ill K4	17.95	19.75
Cleveland A7	*17.85*	
Crawfordsville Ind. M8	17.95	19.65
Fostoria O S1	18.35	19.90*
Houston S5	17.10	18.95**
Jacksonville M8	17.95	19.65
Johnstown B2	17.85	19.65§
Joliet,Ill A7	17.60	
KansasCity,Mo S5	17.40	
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P lm r,Mass W12	18.15	19.70†
Pitts.Calif. C11	*18.20*	*19.75†*
S SanFran C10	18.20	19.75**
SparrowsPt. B2	17.95	19.75§
Sterling 37 N15	17.25	19.05††
Waukegan A7	*17.85*	*19.40†*
Worcester A7	*18.15*	

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala City,Ala R2	9.00	9.55**
Aliquippa J5	8.65	9.325§
Atlanta(48) A11	*9.10*	*9.775§*
Bartonville(48) K4	9.10	9.775
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	
Crawfordsville M8	9.10	9.775
Donora,Pa A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48) S5	9.25	9.80**
Jacksonville,Fla M8	9.10	9.775
Johnstown B2(48)	9.00	9.675§
Joliet Ill A7	9.00	9.55†
Kans City(48) S5	9.25	9.80**
Kokomo(48) C16	9.10	9.65†
LosAngeles B3	9.95	10.625§
Minnequa C10	9.25	9.80**
Monessen P7(48)	8.65	9.325§
Palmer Mass W12	9.30	9.85†
Pitts Calif C11	9.95	10.50†
Rankin,Pa A7	9.00	9.55†
S Chicago R2	9.00	9.55**
S SanFran C10	9.95	10.50**
Spar'wsPt.B2(48)	9.10	9.775§
Sterling(48) N15	9.25	9.925††
Sterling(7) (48)	9.15	9.825††
Struthers O Y1	9.00	9.65§
Worcester,Mass.A7	9.30	9.85†

Based on zinc price of: *13.50 †5c. §10c. ‡Less than 10c ††10.50c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)

½ in. and smaller:	
3 in. and shorter	53.0
3¼ in. thru 6 in.	47.0
Longer than 6 in.	33.0
⅝ in. 3 in. & shorter	44.0
3¼ in. thru 6 in.	37.0
Longer than 6 in.	27.0
¾ in. thru 1 in.:	
6 in. and shorter	33.0
Longer than 6 in.	27.0
1¼ in. and larger:	
All lengths	27.0

Undersize Body (rolled thread)

½ in. and smaller:	
3 in. and shorter	53.0
3¼ in. thru 6 in.	47.0
Machine Bolts,	
Hot Galvanized	
(Square & Hex, Full & Undersize Body)	
½ in. and smaller:	
3 in. and shorter	38.0
3¼ in. thru 6 in.	29.0
Longer than 6 in.	15.0
⅝ in. 3 in. & shorter	27.0
3¼ in. thru 6 in.	17.0
Longer than 6 in.	10.0
¾ in. thru 1 in.:	
6 in. and shorter	18.0
Longer than 6 in.	7.0
1¼ in. and larger:	
All lengths	7.0

Carriage, Plow & Lag Bolts,
Hot Galvanized

½ in. and smaller:	
6 in. and shorter	28.0
Larger diameters and longer lengths	13.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)

½ in. and smaller:	
6 in. and shorter	46.0
Larger diameters and longer lengths	32.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Tilting Up Bolts

½ in. and smaller:	
6 in. and shorter	46.0
Larger diameters and longer lengths	32.0

NUTS

(Container quantities and over)

Square Nuts, Reg. & Heavy:	
All sizes	56.0
Square Nuts, Reg. & Heavy, Hot Galvanized:	
All sizes	41.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:	
⅜ in. and smaller	62.0
⅞ in. to 1 in., incl.	56.0
1⅛ in. and larger	51.5
Hex Nuts, Semifinished, Heavy, (Incl. Slotted):	
⅜ in. and smaller	62.0
⅞ in. to 1½ in., incl.	56.0
1⅛ in. and larger	51.5
Hex Nuts, Finished (Incl. Slotted and Castellated):	
⅜ in. and smaller	65.0
1 in. to 1½ in., incl.	57.0
1⅛ in. and larger	51.5
Semifinished Hex Nuts, Reg. (Incl. Slotted):	
⅜ in. and smaller	62.0
⅞ in. to ⅞ in., incl.	65.0
1 in. to 1½ in., incl.	57.0
1⅛ in. and larger	51.5

CAP AND SETSCREWS
(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Capscrews, Coarse or Fine Thread, Bright:	
6 in. and shorter:	
⅝ in. and smaller	35.0
¾ ⅞ and 1 in.	16.0
Longer than 6 in.:	
¾ in. and smaller	3.0
¾ ⅞ and 1 in.	+11.0
High Carbon, Heat Treated:	
6 in. and shorter:	
⅝ in. and smaller	20.0
¾ ⅞ and 1 in.	+5.0
Longer than 6 in.:	
⅝ in. and smaller	+19.0
¾ ⅞ and 1 in.	+39.0
Flat Head Capscrews:	
¾ in. and smaller, 6 in. and shorter	+85.0
Setscrews, Square Head, Cup Point, Coarse Thread:	
Through 1 in. diam.:	
6 in. and shorter	+5.0
Longer than 6 in.	+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in. larger 12.85
⅞ in. and smaller by 6 in. and shorter, 15.0%

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	- -	27 24	23 13
1¼	13	- -	32 25	24 41
1½	13	30 42	35 85	28 98
1¾	13	35 94	42 12	31 89
2	13	40 28	47 21	35 74
2¼	13	45 36	53 17	40 26
2½	12	49 24	57 72	43 70
2¾	12	54 23	63 57	48 13
2¾	12	58 73	68 83	52 13
3	12	62 62	73 40	55.59

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Tee Rails All	Tee Rails 60 lb Under
Rails				
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W Va. C15	....	....	....	6.50
Johnstown Pa. B2	....	....	....	(16)+6.725
Lackawanna,N Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.22
Steelton Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	7.025
Seattle R3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet Ill U5	7.25
Lackawanna,N Y B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo R5	15.35
Lebanon Pa R2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh P14	14.75
Seattle R3	15.85

SCREW SPIKES

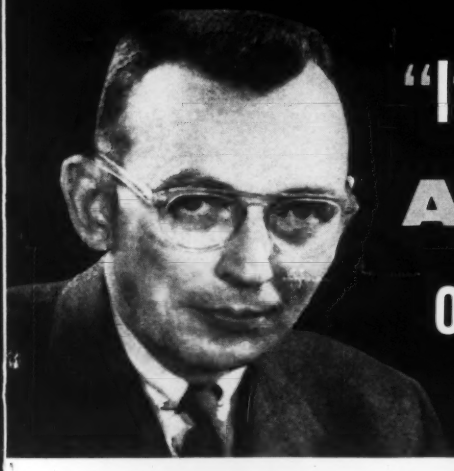
Lebanon Pa B2	15.10

STANDARD TRACK SPIKES

Fairfield Ala T2	9.75
Ind Harbor Ind 1-2, Y1	10.10
KansasCity Mo R5	10.10
Lebanon,Pa. B2	10.10
Minnequa Colo C10	10.10
Pittsburgh J5	10.10
Seattle R3	10.60
S Chicago Ill R2	10.10
Struthers O Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¾ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 0.70c; 1 15/16 to 3 in., inclusive, 7.05c.
(6) Chicago or Birm. Base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn. base.
(22) Dela. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.395c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.875c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.0c for cut lengths.
(35) 22" and narrower.
(36) 24" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.685c.
(43) 9 14½ Ga.
(44) To fabricators.
(48) 6 Ga.
(49) 3½ in. and smaller rounds; 9.65c, over 3½ in. and other shapes.

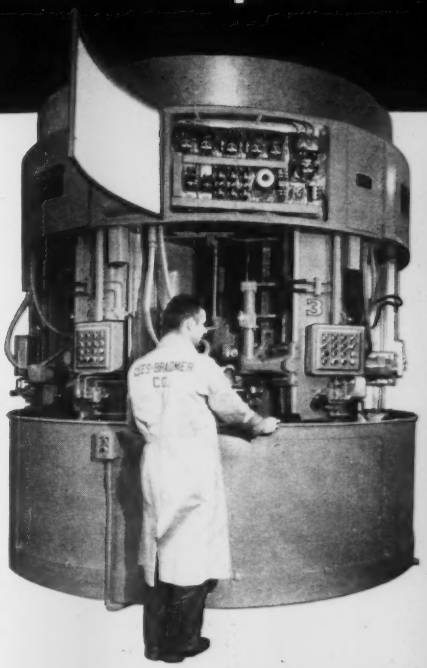


"If we stick to ALLEN-BRADLEY... our control troubles evaporate"

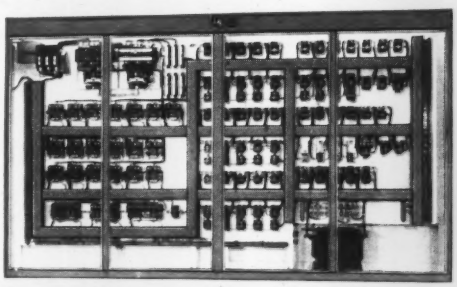
... so says John A. Bradner,
President, Lees-Bradner Co.,
Cleveland, Ohio, machine tool manufacturer.

"Yes, we have chosen Allen-Bradley controls. We use them, like them, and most thoroughly approve of them. We do our level best to see that they're the ones with which LEES-BRADNER machines are equipped.

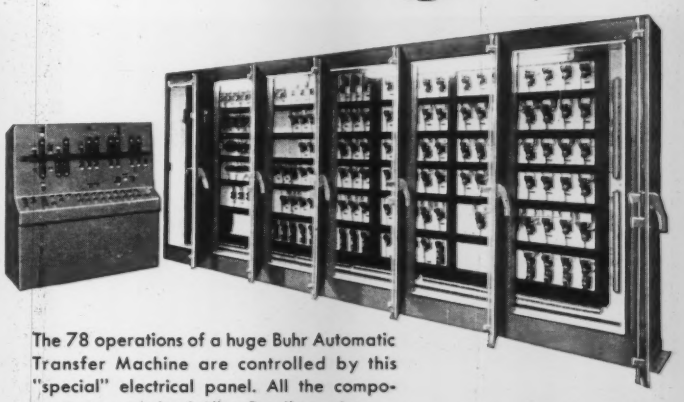
"It has been our experience in over 25 years of pioneering electrical rather than mechanical control of machine tools that, if we stick to Allen-Bradley, control troubles we are too apt to have otherwise—*evaporate!*"



Lees-Bradner Gear Hobbing Machine, above, uses six motor control panels assembled from standard A-B components.



This is the electrical control panel for a 12-station Kingsbury Indexing Automatic which performs 19 operations on an automatic transmission part. All the components in this panel are standard A-B control items.



The 78 operations of a huge Buhr Automatic Transfer Machine are controlled by this "special" electrical panel. All the components are standard Allen-Bradley units.

A-B QUALITY

ALLEN-BRADLEY
MOTOR CONTROL
QUALITY

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis. In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

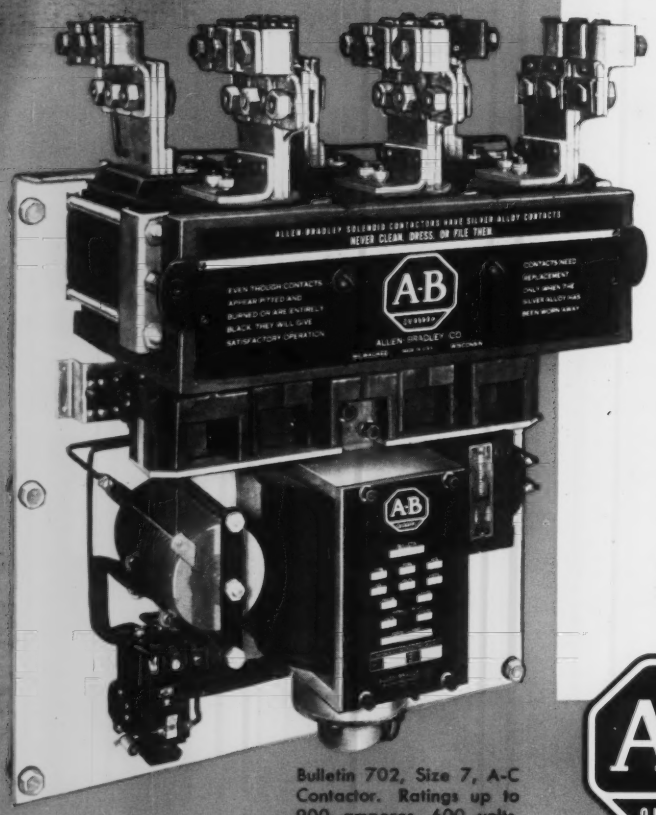
10-38-2

only

ALLEN-BRADLEY gives you Trouble Free Solenoid Starters in ALL SIZES!

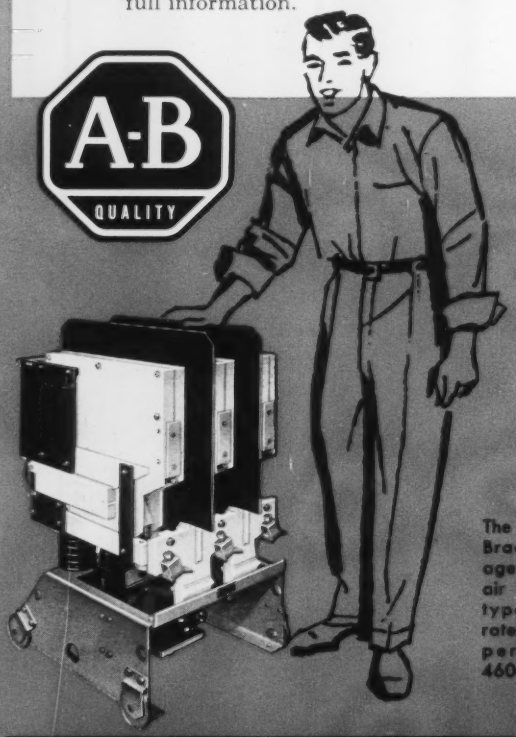
The simple solenoid design—exclusive with Allen-Bradley in the big starter sizes—has only one moving part. This eliminates the trouble causing bearings and flexible jumpers of conventional clapper switches . . . and assures millions of trouble free operations. A-B solenoid starters also have double break, silver alloy contacts that never need any servicing. They are always in perfect operating condition—until the contact is completely used up.

This time-tested solenoid construction is available on *all* Allen-Bradley starters up through Size 7 . . . as well as on A-B's rugged, air break, high voltage starters. Write for full information.

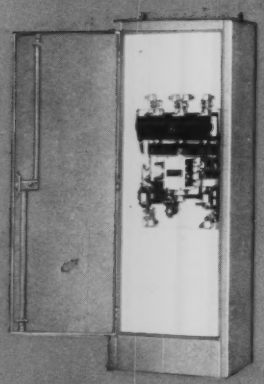


Bulletin 702, Size 7, A-C Contactor. Ratings up to 900 amperes, 600 volts. This basic solenoid contactor is used in large A-B low voltage starters.

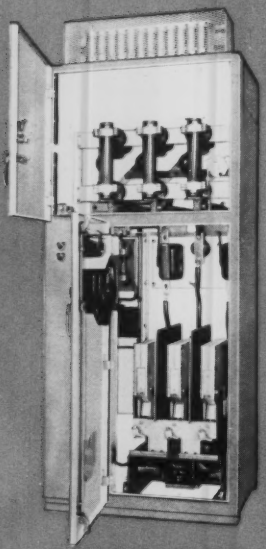
A-B QUALITY



The heart of Allen-Bradley high voltage starters is this air break, solenoid type contactor—rated at 400 amperes, 2300 or 4600 volts.



Bulletin 709 across-the-line solenoid starters are made in ratings to 300 hp, 220 v; 600 hp, 440-550 v.



A-B high voltage starters are built for all types of motors. Ratings to 1500 hp, 2300 v; 2500 hp, 4600 v.

ALLEN-BRADLEY
MOTOR CONTROL
QUALITY

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis.
In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

10-58-MR

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Ambridge, Pa. N2	+12.25	....	+5.75	....	+3.25	....	+1.75	....	+1.75	....	+2	....	0.5	+16.25
Lorain, O. N3	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25
Youngstown Y1	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

ELECTRICWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	+12.25	+27.25	+5.75	+22.5	+3.25	+20	+1.75	+18.5	+1.75	+18.5	+2	+18.75	0.5	+16.25

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Alton, Ill. L1	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Benwood, W. Va. W 0	1.5	+25	+10.5	+34	+21	+42.5	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Butler, Pa. F6	4.5	+22	+8.5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Etna, Pa. N2	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Fairless, Pa. N3	....	....	....	....	....	....	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Fontana, Calif. K1	....	....	....	....	....	....	+10.75	+26	+7.75	+22	+4.25	+17.5	+1.75	+16.75
Indiana Harbor, Ind. Y1	....	....	....	....	....	....	1.25	+14	4.25	+10	7.75	+5.5	10.25	+6.25
Lorain, O. N3	....	....	....	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sharon, Pa. S4	4.5	+22	5	+32	+19.5	+41	....	....	....	....	....	....	....	....
Sharon, Pa. M6	....	....	..	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Sparrows Pt., Md. B2	0.5	+26	5	+35	+22	+43.5	0.25	+15	3.25	+11	6.75	+6.5	9.25	+5.75
Wheatland, Pa. W9	4.5	+22	..	+32	+19.5	+41	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75
Youngstown R2, Y1	....	....	..	....	....	....	2.25	+13	5.25	+9	8.75	+4.5	11.25	+3.75

Size—Inches	1½		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.72		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Alton, Ill. L1	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Benwood, W. Va. W10	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Etna, Pa. N2	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Fairless, Pa. N3	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Fontana, Calif. K1	+1.25	+15.75	+0.75	+15.25	0.75	+15.5	0.75	+15.5	+9.75	+26.5	+9.75	+26.5
Indiana Harbor, Ind. Y1	10.75	+3.75	11.25	+3.25	12.75	+3.5	12.25	+3.5	2.25	+14.5	2.25	+14.5
Lorain, O. N3	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sharon, Pa. M6	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	....	....	....	....
Sparrows Pt., Md. B2	9.75	+4.75	10.25	+4.25	11.75	+4.5	11.75	+4.5	1.25	+15.5	1.25	+15.5
Wheatland, Pa. W9	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5
Youngstown R2, Y1	11.75	+2.75	12.25	+2.25	13.75	+2.5	13.75	+2.5	3.25	+13.5	3.25	+13.5

*Galvanized pipe discounts based on current price of zinc (10.00c, East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	—Rerolling— Ingot	Slabs	Forging Billets	H.R. Strip	H.R. Rods; C.F. Wire	Bars; Structural Shapes	Plates	Sheets	C.R. Strip; Flat Wire
201	22.00	27.00	....	36.00	40.00	42.00	39.25	48.50	45.00
202	23.75	30.25	36.50	39.00	40.75	43.00	40.00	49.25	49.25
301	23.25	28.00	37.25	37.25	42.00	44.25	41.25	51.25	47.50
302	25.25	31.50	38.00	40.50	42.75	45.00	42.25	52.00	52.00
302B	25.50	32.75	40.75	45.75	45.00	47.25	44.50	57.00	57.00
303	....	32.00	41.00	46.00	48.50	48.00	45.00	56.75	56.75
304	27.00	33.25	40.50	44.25	45.25	47.75	45.75	55.00	55.00
304L	....	....	45.25	51.50	53.00	55.50	53.50	63.25	63.25
305	28.50	36.75	42.50	47.50	45.25	47.75	46.25	58.75	58.75
308	30.75	38.25	47.25	50.25	52.75	55.75	55.25	63.00	63.00
309	39.75	49.50	57.75	64.50	63.75	67.00	66.00	80.50	80.50
310	49.75	61.50	78.00	84.25	86.50	91.00	87.75	96.75	96.75
314	....	....	77.50	....	86.50	91.00	87.75	99.00	104.25
316	39.75	49.50	62.25	69.25	69.25	73.00	71.75	80.75	80.75
316L	....	55.50	70.00	76.50	77.00	80.75	79.50	89.25	89.25
317	48.00	60.00	76.75	88.25	86.25	90.75	88.50	101.00	101.00
321	32.25	40.00	47.00	53.50	52.50	55.50	54.75	65.50	65.50
330	....	....	115.75	....	132.00	138.50	135.50	149.25	149.25
18-8 CbTa	37.00	46.50	55.75	63.50	61.50	64.75	64.75	79.25	79.25
403	....	....	28.25	....	32.00	33.75	30.00	40.25	40.25
405	19.50	25.50	29.75	36.00	33.50	35.25	32.50	46.75	46.75
410	16.75	21.50	28.25	31.00	32.00	33.75	30.00	40.25	40.25
416	....	....	28.75	....	32.50	34.25	31.25	48.25	48.25
420	26.00	33.50	34.25	41.75	39.25	41.25	40.25	62.00	62.00
430	17.00	21.75	28.75	32.00	32.50	34.25	31.00	40.75	40.75
430F	....	....	29.50	....	33.00	34.75	31.75	51.75	51.75
431	....	28.75	37.75	....	42.00	44.25	41.00	56.00	56.00
446	....	....	39.25	59.00	44.25	46.50	42.75	70.00	70.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Div., U. S. Steel Corp.; Anchor Drawn Steel Co., division of Vanadium-Alloys Steel Co.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; A. M. Byers Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Carpenter Steel Co. of New England; Charter Wire Products; Crucible Steel Co. of America; Damascus Tube Co.; Dearborn Div., Sharon Steel Corp.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Firth Sterling Inc.; Fort Wayne Metals Inc.; Green River Steel Corp., subsidiary of Jessop Steel Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Ellwood Ivins Steel Tube Works Inc.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Stainless & Strip Div., Jones & Laughlin Steel Corp.; Joslyn Stainless Steels, division of Joslyn Mfg. & Supply Co.; Latrobe Steel Co.; Lukens Steel Co.; Maryland Fine & Specialty Wire Co. Inc.; McLouth Steel Corp.; Metal Forming Corp.; Midvale-Heppenstall Co.; National Standard Co., National Tube Div., U. S. Steel Corp.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Riverside-Alloy Metal Div., H. K. Porter Company Inc.; Rodney Metals Inc.; Sawhill Tubular Products Inc.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Standard Tube Co.; Superior Steel Div., Copperweld Steel Co., Superior Tube Co.; Swepco Tube Corp.; Techalloy Co. Inc.; Timken Roller Bearing Co.; Trent Tube Co., subsidiary of Crucible Steel Co. of America; Tube Methods Inc.; Ulbrich Stainless Steel Inc.; U. S. Steel Corp.; Universal-Cyclops Steel Corp.; Vanadium-Alloys Steel Co.; Wall Tube & Metal Products Co.; Wallingford Steel Co., subsidiary of Allegheny Ludlum Steel Corp.; Washington Steel Corp.

Clad Steel

	Plates 5%	Plates Carbon Base 10%	Plates Carbon Base 15%	Plates Carbon Base 20%	Sheets Carbon Base 20%
Stainless					
302	....	....	....	....	37.50
304	26.05	28.80	31.55	34.30	39.75
304L	30.50	33.75	36.95	40.15	....
316	38.20	42.20	46.25	50.25	58.25
316L	42.30	46.75	51.20	55.65	....
316 Cb	49.90	55.15	60.40	65.65	....
321	31.20	34.50	37.75	41.05	47.25
347	36.90	40.80	44.65	48.55	57.00
405	22.25	24.60	26.90	29.25	....
410	20.55	22.70	24.85	27.00	....
430	21.20	23.45	25.65	27.90	....
Inconel	48.90	59.55	70.15	80.85	....
Nickel	41.65	51.95	62.30	72.70	....
Nickel, Low Carbon	41.95	52.60	63.30	74.15	....
Monel	43.35	53.55	63.80	74.05	....

	Strip, Carbon Base —Cold Rolled— 10%	Both Sides
Copper*	34.75	40.65

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4, and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Reg. Carbon (W-1)	0.330	W-Cr Hot Work (H-12)	0.530
Spec. Carbon (W-1)	0.385	V-Cr Hot Work (H-13)	0.550
Oil Hardening (O-1)	0.505	W Hot Wk. (H-21)	1.425-1.44
V-Cr-Hot Work (H-11)	0.505	Hi-Carbon-Cr (D-11)	0.955

Grade by Analysis (%) W	Cr	V	Co	Mo	AISI Designation	$ per lb
18	4	1	....	....	T-1	1.840
18	4	2	....	....	T-2	2.005
13.5	4	3	....	....	T-3	2.105
18.25	4.25	1	4.75	....	T-4	2.545
18	4	2	9	....	T-5	2.915
20.25	4.25	1.6	12.25	....	T-6	4.330
13.75	3.75	2	5	....	T-8	2.485
1.5	4	1	....	8.5	M-1	1.200
6.4	4.5	1.9	....	5	M-2	1.345
6	4	3	....	6	M-3	1.590

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, F2, J3, L3, M14, S8, U4, V2, and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	62.00	62.50‡	....	....
Birmingham U6	....	62.50‡	66.50	....
Woodward,Ala. W15	62.00**	62.50‡	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N.Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77 79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
New York, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
Nevilleisland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.60	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	67.00
Mansfield,Ohio, deld.	71.30	....	71.80	72.30
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	68.00	68.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
‡Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	98.00
Keokuk,Iowa Open-hearth & Fdry, $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry, 12½ lb piglets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$78.50
Rockwood,Tenn. T3 (Phos. 0.035% max)	78.50
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelhia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Nevilleisland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Gal. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24 #	....	9.40	9.29	10.90
Baltimore	8.00	8.90	10.32	....	8.70	8.65	12.33 #	15.18	8.50	8.65	9.75
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	8 64	8 89	10.99
Boston	9.31	10.40	11.39	53.50	9.73	10.11	13.39 #	15.71	10.01	10.02	11.87
Buffalo	8.25	9.00	11.07	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.45	53.00	8.51	8.99	9.15	15.05	9.15	8.89	10.20
Cincinnati	8.43	9.51	10.50	52.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	10.20	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	10.81	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.20	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.57	8.94	10.68	....	8.97	8.90	10.74
Los Angeles	8.70[3]	10.80[3]	12.15[3]	57.60	9.15	9.10[3]	12.95[3]	16.35	9.00[3]	9.10[3]	11.30[3]
Memphis, Tenn.	8.55	9.80	....	....	8.84	9.32	11.96 #	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	10.59	....	8.65	9.13	9.39	15.19	9.22	9.05	10.34
Moline, Ill.	8.55	9.80	10.45	....	8.58	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	10.56	53.08	9.64	9.99	13.25 #	15.50	9.74	9.77	11.05
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.00	9.25	11.17	52.69	8.70	8.65	11.50	15.48	8.50	8.75	9.75**
Pittsburgh	8.35	9.55	10 85	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.63	9.83	10.83	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	10.71	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.00	55.10	9.75	10.15	13.00	16.00	9.85	10.00	12.00
Seattle	8.70	10.30[2]	10.95[2]	55.02	8.75	8.85	14.70	16.80[3]	8.55	8.45	10.85
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	9.95	11.15	12.20	57.38	10.00	10.10	14.70	16.80	9.80	9.70	12.10
Washington	8.88	....	....	....	9.36	9.56	10.94	....	9.79	9.26	10.74

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **⅛ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price, 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over;; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Ashland, Grahn, Hayward, Hitchens, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Winburne, Snow Shoe, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parrall, Portsmouth, Ohio, Ottawa, Ill., Stevens Pottery, Ga., $140; Salina, Pa., $145; Niles, Ohio, $138; Cutler, Utah, $165.

Super-Duty: Ironton, Ohio, Vandalia, Mo., Olive Hill, Ky., Clearfield, Salina, Winburne, Snow Shoe, Pa., New Savage, Md., St. Louis, $185; Stevens Pottery, Ga., $195; Cutler, Utah, $233.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Pt. Matilda, Pa., Portsmouth, Ohio, Hawstone, Pa., $158; Warren, Niles, Windham, Ohio, Hays, Latrobe, Morrisville, Pa., $163; E. Chicago, Ind., Joliet, Rookdale, Ill., $163; Lehigh, Utah, $175; Los Angeles, $180.

Super-Duty: Sproul, Hawstone, Pa., Niles, Warren, Windham, Ohio, Leslie, Md., Athens, Tex., $157; Morrisville, Hays, Latrobe, Pa., $168; E. Chicago, Ind., $167; Curtner, Calif., $182.

Semisilica Brick (per 1000)

Clearfield, Pa., $140; Philadelphia, $137; Woodbridge, N. J., $135.

Ladle Brick (per 1000)

Dry Pressed: Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Vanport, Pa., Mexico, Vandalia, Mo., Wellsville, Irondale, New Salisbury, Ohio, $96.75; Clearfield, Pa., Portsmouth, Ohio, $102.

High-Alumina Brick (per 1000)

50 *Per Cent:* St. Louis, Mexico, Vandalia, Mo. $235; Danville, Ill., $253; Philadelphia, Clearfield, Pa., $230; Orviston, Snow Shoe, Pa., $260.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $295; Danville, Ill., $313; Clearfield, Orviston, Snow Shoe, Pa., $320; Philadelphia, $310.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $335; Danville, Ill., $353; Clearfield, Orviston, Snow Shoe, Pa., $360; Philadelphia, $350.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $188.

Nozzles (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., St. Louis, $310.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $234.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Pymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Woodville, Gibeonburg, Narlo, Ohio, $16.75; Thornton, McCook, Ill., $17; Dolly Siding, Bonne Terre, Mo., $15.60.

Magnesite (per net ton)

Domestic, dead-burned, ⅛ in. grains with fines: Chewelah, Wash., Luning, Nev., $46; ⅜ in. grains with fines: Baltimore, $73.

Fluorspar

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $37-$41; 70%, $36-$40; 60%, $33-$36.50. Imported, net tons, f.o.b. cars point of entry, duty paid, metallurgical grade: European, $29-$31, contract; Mexican, all rail, duty paid, $25; barge, Brownsville, Tex., $26.

Metal Powder

(Per pound f.o.b. shipping point in ton lots for minus 100 mesh, except as noted)

	Cents
Sponge Iron, Swedish: deld. east of Mississippi River, ocean bags 23,000 lb and over.. f.o.b. Riverton or Camden, N. J., west of Mississippi River.	10.50 / 9.50
Sponge Iron, Domestic, 98 + % Fe: Deld. east of Mississippi River, 23,000 lb and over	10.50
Electrolytic Iron. Melting stock, 99.87% Fe, irregular fragments of ⅛ in. x 1.3 in.	28.75
(In contract lots of 240 tons price is 22.75c)	
Annealed, 99.5% Fe..	36.50
Unannealed (99 + % Fe)	36.00
Unannealed (99 + % Fe) (minus 325 mesh)	59.00
Powder Flakes (minus 16, plus 100 mesh)..	29.00
Carbonyl Iron: 98.1-99.9%, 3 to 20 microns, depending on grade, 93.00-290.00 in standard 200-lb containers; all minus 200 mesh.	

	Cents
Aluminum: Atomized, 500-lb drum, freight allowed Carlots	38.50
Ton lots	40.50
Antimony, 500-lb lots	42.00*
Brass, 5000-lb lots	31.00-46.70†
Bronze, 5000-lb lots	47.20-51.50†
Copper: Electrolytic	14.75*
Reduced	14.75*
Lead	7.50*
Manganese: Minus 35 mesh	64.00
Minus 100 mesh	70.00
Minus 200 mesh	75.00
Nickel, unannealed	74.00
Nickel-Silver, 5000-lb lots	48.80-53.50†
Phosphor-Copper, 5000-lb lots	59.30
Copper (atomized) 5000-lb lots	39.80-48.30†
Silicon	47.50
Solder	7.00*
Stainless Steel, 304	$1.07
Stainless Steel, 316	$1.26
Tin	14.00*
Zinc, 5000-lb lots	17.50-30.70†
Tungsten: Melting grade, 99% 60 to 200 mesh, nominal; 1000 lb and over	Dollars 3.15
Less than 1000 lb	3.30
Chromium, electrolytic 99.8% Cr min metallic basis	5.00

*Plus cost of metal. †Depending on composition. ‡Depending on mesh.

Electrodes

Threaded with nipple; unboxed, f.o.b. plant

GRAPHITE

Inches Diam	Inches Length	Per 100 lb
2	24	$60.75
2½	30	39.25
3	40	37.00
4	40	35.00
5⅛	40	34.75
6	60	31.50
7	60	28.25
8, 9, 10	60	28.00
12	72	26.75
14	60	26.75
16	72	25.75
17	60	26.25
18	72	26.25
20	72	25.25
24	84	26.00

CARBON

8	60	13.30
10	60	13.00
12	60	12.95
14	60	12.85
14	72	11.95
17	60	11.85
17	72	11.40
20	84	11.40
20	90	11.00
24	72, 84	11.25
24	96	10.95
30	84	11.05
40, 35	110	10.70
40	100	10.70

Imported Steel

(Base per 100 lb, landed, duty paid, based on current ocean rates. Any increase in these rates is for buyer's account. Source of shipment: Western continental European countries.)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A 305	$5.10	$5.10	$5.00	$5.45
Bar Size Angles	5.05	5.05	5.00	5.38
Structural Angles	5.05	5.05	5.05	5.38
I-Beams	5.11	5.11	5.11	5.45
Channels	5.11	5.11	5.11	5.45
Plates (basic bessemer)	6.62	6.62	6.62	6.94
Sheets, H.R.	8.20	8.20	8.20	8.50
Sheets, C.R. (drawing quality)	8.75	8.75	8.75	9.12
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.71	25.59	25.59	26.46
Barbed Wire (†)	6.65	6.65	6.65	7.00
Merchant Bars	5.40	5.40	5.35	5.90
Hot-Rolled Bands	7.15	7.15	7.15	7.55
Wire Rods, Thomas Commercial No. 5	5.05	5.18	5.00	5.35
Wire Rods, O.H. Cold Heading Quality No. 5	5.80	5.93	5.75	6.05
Bright Common Wire Nails ($)	8.02	8.02	7.92	8.20

†Per 82 lb net reel. $Per 100-lb kegs, 20d nails and heavier.

Ores

Lake Superior Iron Ore

(Prices effective for the 1958 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Mesabi bessemer	$11.60
Mesabi nonbessemer	11.45
Old Range bessemer	11.85
Old Range nonbessemer	11.70
Open-hearth lump	12.70
High phos	11.45

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect Jan. 30, 1957, and increases or decreases after that date are absorbed by the seller.

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

New Jersey, foundry and basic 62-64% concentrates	18.00-19.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 65%	25.00
N. African hematite (spot)	nom
Brazilian iron ore, 68.5%	26.00

Tungsten Ore

Net ton, unit

Foreign wolframite, good commercial quality	$8.50-9.00*
Domestic, concentrates f.o.b. milling points	17.00-22.00

*Before duty.

Manganese Ore

Mn 46-48%, Indian (export tax included) $1.10 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; other than Indian, nominal; contracts by negotiation.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and Rhodesian	
48% 3:1	$42.00-44.00
48% 2.8:1	38.00-40.00
48% no ratio	$29.00-31.00
South African Transvaal	
44% no ratio	22.00-23.00
48% no ratio	29.00-31.00
Turkish	
48% 3:1	$51.00-55.00
Domestic Rail nearest seller	
18% 3:1	39.00

Molybdenum

Sulfide concentrate, per lb of Mo content, mines, unpacked	$1.23

Antimony Ore

Per short ton unit of Sb content, c.i.f. seaboard

50-55%	$2.25-2.40
60-65%	2.50-3.10

Vanadium Ore

Cents per lb V_2O_5

Domestic	31.00

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, Pa., furnace	$14.75-15.75
Connellsville, Pa., foundry	18.00-18.50

Oven Foundry Coke

Birmingham, ovens	$28.85
Cincinnati, deld.	31.84
Buffalo, ovens	30.50
Camden, N. J., ovens	29.50
Detroit, ovens	30.50
Pontiac, Mich., deld.	32.45
Saginaw, Mich., deld.	34.03
Erie, Pa., ovens	30.50
Everett, Mass., ovens: New England, deld.	31.55*
Indianapolis, ovens	29.75
Ironton, Ohio, ovens	29.00
Cincinnati, deld.	31.84
Kearny, N. J., ovens	29.75
Milwaukee, ovens	30.50
Neville Island (Pittsburgh), Pa., ovens	29.25
Painesville, Ohio, ovens	30.50
Cleveland, deld.	32.69
Philadelphia, ovens	29.50
St. Louis, ovens	31.50
St. Paul, ovens	29.75
Chicago, deld.	33.29
Swedeland, Pa., ovens	29.50
Terre Haute, Ind., ovens	29.75

*Or within $5.15 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzene	38.00
Toluene, one deg	29.50
Industrial xylene	32.00-34.00
Per ton, bulk, ovens	
Ammonium sulfate	$32.00-34.00

Cents per pound, producing point

Phenol: Grade 1, 17.50; Grade 2-3, 15.50; Grade 4, 17.50; Grade 5, 16.50; Grade 6, 14.50.

Ferroalloys

MANGANESE ALLOYS

Spiegeleisen: Carlot, per gross ton, Palmerton, Neville Island, Pa. 21-23% Mn, $105; 19-21% Mn, 1-3% Si, $102.50; 16-19% Mn, $100.50.

Standard Ferromanganese: (Mn 74-76%, C 7% approx) base price per net ton, $245. Johnstown, Duquesne, Sheridan, Neville Island, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Add or subtract $2 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively. (Mn 79-81%). Lump $253 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2 60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

High-Grade Low-Carbon Ferromanganese: (Mn 85-95%). Carload, lump, bulk, max 0.07% C, 35.1c per lb of contained Mn, carload packed 36.4c, ton lots 37.9c, less ton 39.1c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max 0.03% C, 3.5c for max 0.5% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.25-1.5%, Si 1.5% max). Carload, lump, bulk, 25.5c per lb of contained Mn, packed, carload 26.8c, ton lot 28.4c, less ton 29.6c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2%). Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lot 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carload, 34c; 2000 lb to min carload, 36c; less ton, 38c; 50 lb cans, add 0.5c per lb. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-68%). Carload, lump, bulk 1.50% C grade, 18-20% Si, 12.8c per lb of alloy. Packed, c.l. 14c, ton 14.45c, less ton 15.45c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. For 2% C grade, Si 15-17%, deduct 0.2% from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot, 2" x D, $1.50 per lb of contained Ti; less ton to 300 lb, $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lot $1.35, less ton to 300 lb $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract min, c.l. $240 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Miss'ssippi River and north of Baltimore and St. Louis. Spot, $245.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4%). Contract c.l. $290 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed. Spot, $295.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l. lump, bulk 28.75c per lb of contained Cr; c.l. packed 30.30c, ton lot 32.05c; less ton 33.45c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: Cr 63-66% (Simplex), carload lump, bulk, C 0.025% max, 36.75c per lb contained Cr; 0.010% max, 37.75c. Ton lot, add 3.5c; less ton, add 5.2c. Delivered.

Cr 67-71%, carload, lump, bulk, C 0.02% max, 41.00c per lb contained Cr; 0.025% max, 39.75c; 0.05% max, 39.00c; 0.10% max, 38.50c; 0.20% max, 38.25c; 0.50% max, 38.00c; 1.0% max, 37.75c; 1.5% max, 37.50c; 2.0% max 37.25c. Ton lot, add 3.4c; less ton lot, add 5.1c. Delivered.

Foundry Ferrochrome, High-Carbon: (Cr 61-66%, C 5-7%, Si 7-10%). Contract, c.l., 2 in. x D, bulk 30.5c per lb of contained Cr. Packed c.l. 32.4c, ton 34.2c, less ton 35.7c. Delivered. Spot, add 0.25c.

Foundry Ferrosilicon Chrome: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload packed, 8M x D, 21.25c per lb of alloy, ton lot 22.50c; less ton lot 23.70c. Delivered. Spot, add 0.25c.

Ferrochrome-Silicon: Cr 39-41%, Si 42-45%, C 0.05% max or Cr 33-36%, Si 45-48%, C 0.05% max. Carload, lump, bulk, 3" x down and 2" x down, 28.25c per lb contained Cr, 14.60c per lb contained Si. 0.75" x down 29.40c per lb contained Cr, 14.60c per lb contained Si.

Chromium Metal, Electrolytic: Commercial grade (Cr 99.8% min, metallic basis, Fe 0.2% max). Contract, carlot, packed 2" x D plate (about ⅜" thick) $1.29 per lb, ton lot $1.31, less ton lot $1.33. Delivered. Spot, add 5c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth grade (V 50-55%, Si 8% max, C 3% max). Contract, any quantity, $3.20 per lb of contained V. Delivered. Spot, add 10c. **Special Grade:** (V 50-55% or 70-75%, Si 2% max., C 0.5% max) $3.30. **High Speed Grade:** (V 50-55%, or 70-75%, Si 1.50% max, C 0.20% max) $3.40.

Grainal: Vanadium Grainal No. 1 $1.05 per lb; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract less carload lot, packed, $1.38 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

50% Ferrosilicon: Contract, carload, lump, bulk, 14.6c per lb of contained Si. Packed c.l. 17.1c, ton lot 18.55c, less ton 22.20c, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; Portland, Oreg. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.45c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 15.75c per lb contained silicon. Packed, c.l. 17.75c, ton lot 19.55c, less ton 20.9c. Delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 16.9c per lb of contained Si. Packed, c.l. 18.8c, ton lot 20.45c, less ton 21.7c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 20c per lb of contained Si. Packed, c.l. 21.65c, ton lot 23.05c, less ton 24.1c. Delivered. Spot, add 0.25c.

Silicon Metal: (98% min Si, 1.00% max Fe, 0.07% max Ca). C.l. lump, bulk, 21.5c per lb of Si. Packed, c.l. 23.15c, ton lot 24.45c, less ton 25.45c. Add 0.5c for max 0.03% Ca grade. Add 0.5c for 0.50 Fe grade analyzing min 98.25% min Si.

Alsifer: (Approx 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.60c per lb of alloy; ton lot, packed, 10.95c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, C 0.20% max). Contract, c.l. lump, bulk, 9.25c per lb of alloy. Packed, c.l. 10.45c, ton lot 11.6c, less ton 12.45c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 27.25c per lb of alloy, ton lot 28.4c, less ton 29.65c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy; less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per lb; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). Carload, bulk, lump, or 3" x D, $5.25 per lb of contained B. Packed, carload $5.40, ton to c.l. $5.50, less ton $5.60. Delivered.

Carbortam: (B 1 to 2%). Contract, lump, carload $320 per ton, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 23c per lb of alloy, carload packed 24.25c, ton lot 26.15c, less ton 27.15c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.5-3%). Contract, carload, lump, bulk 24c per lb of alloy, carload packed 25.65c, ton lot 27.95c, less ton 29.45c. Delivered. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx 3¾ lb each and containing 2 lb of Cr). Contract, carload, bulk 19.60c per lb of briquet, carload packed in box pallets 19.80c, in bags 20.70c; 3000 lb to c.l. in box pallets 21.00c; 2000 lb to c.l. in bags 21.90c; less than 2000 lb in bags 22.80c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx 3 lb and containing 2 lb of Mn). Contract, carload, bulk 14.8c per lb of briquet; c.l., packed, pallets 15c, bags 16c; 3000 lb to c.l., pallets 16.2c; 2000 lb to c.l., bags 17.2c; less ton 18.1c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx 3½ lb and containing 2 lb of Mn and approx ½ lb of Si). Contract, c.l. bulk 15.1c per lb of briquet; c.l. packed, pallets 15.3c; bags 16.3c, 3000 lb to c.l., pallets 16.5c; 2000 lb to c.l., bags 17.5c; less ton 18.4c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx 5 lb and containing 2 lb of Si and small sizes, weighing approx 2½ lb and containing 1 lb of Si).Contract, carload, bulk 8c per lb of briquet; packed, pallets, 8.2c; bags 9.2c; 3000 lb to c.l., pallets 9.8c; 2000 lb to c.l., bags 10.8c; less ton 11.7c. Delivered. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each). $1.41 per lb of Mo contained, f.o.b. Langeloth, Pa.

Titanium Briquets: Ti 98.27%, $1 per lb, f.o.b. Niagara Falls, N. Y.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%). 5000 lb W or more $2.15 per lb (nominal) of contained W. Delivered.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Si 8% max, C 0.4% max). Ton lots 2" x D, $4 per lb of contained Cb; less ton lots $4.05 (nominal). Delivered.

Ferrotantalum Columbium: (Cb 40% approx, Ta 20% approx, and Cb plus Ta 60% min, C 0.30% max). Ton lots 2" x D, $3.80 per lb of contained Cb plus Ta, delivered; less ton lots $3.85 (nominal).

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, c.l. packed ½-in. x 12 M 20.00c per lb of alloy, ton lot 21.15c, less ton 22.40c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 20c per lb of alloy, ton lot 21.15c; less ton lot 22.4c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 18.45c per lb of alloy; ton lot 19.95c; less ton lot 21.20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal Fe). Lump, carload, bulk 19.25c. Packed c.l. 20.25c, 2000 lb to c.l. 21.25c; less than 2000 lb 21.75c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $5 for each 1% of P above or below the base). Carload, bulk, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $120 per gross ton.

Ferromolybdenum: (55-75%). Per lb of contained Mo, in 200-lb container, f.o.b. Langeloth and Washington, Pa. $1.68 in all sizes except powdered which is $1.74.

Technical Molybdic-Oxide: Per lb of contained Mo, in cans, $1.39; in bags, $1.38, f.o.b. Langeloth and Washington, Pa.

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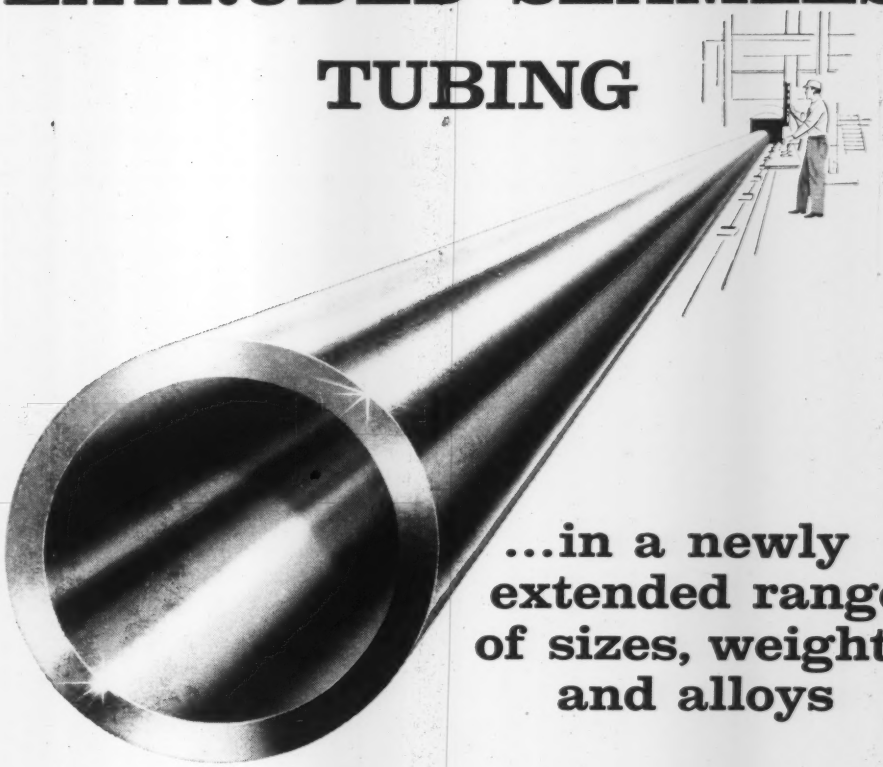

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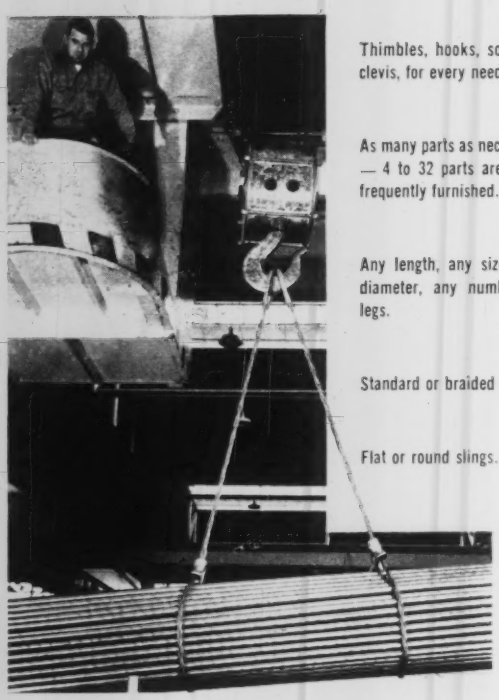

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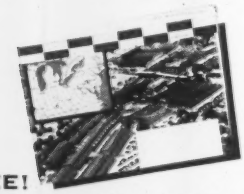

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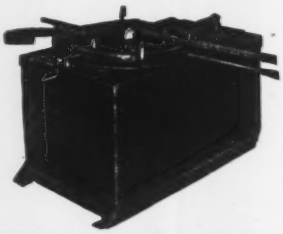

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STEELMAKING SCRAP PRICE COMPOSITE
Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.
1957
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
Oct. 1 1958 $43.00
Week Ago $43.00
Month Ago $42.67
Year Ago $42.17
Sept. Avg. $43.00

Steel Price Index Marking Time

STEEL's composite on the prime grade holds unchanged at $43 for second straight week. Rising steelmaking operations serve to brighten demand prospects

Scrap Prices, Page 134

Philadelphia—Sales of the major open hearth grades have been made at a $2 increase. No. 1 heavy melting, No. 1 bundles, and No. 1 busheling are now quoted at $42, delivered, and No. 2 heavy melting at $38. No. 2 bundles are nominally higher at $26, delivered, while electric furnace bundles have been stepped up $1 and are now quoted at $42 on light sales.

Pittsburgh—Although larger tonnages are being generated, industrial scrap hasn't weakened. Brokers paid $46.75-$47 for Fisher Body Div.'s factory bundles, the same as last month. Observers had expected bids would be off about $1. Dealers are optimistic about the fourth quarter.

Chicago—A leading mill continued its September buying price on No. 1 industrial heavy melting steel but the market broke to $44-$45 at midweek. This comes as another indication that the market is heading into a quiet October despite the slowly advancing steelmaking rate. Consumer buying is virtually absent, leaving prices largely untested.

Cleveland — There's not much change in the market situation here, but with more scrap being generated some price easiness may develop unless the large mill consumers step up their buying. Steelmaking operations are rising, but this has not stimulated demand for scrap noticeably because mills are using more hot metal in their open hearth charges.

Detroit—Local auto lists brought lower prices at the end of September, and the market outlook is bleak. Industrial bundles went at an average of $39.50. In general, the lists went at $5 to $5.50 under those a month earlier. Tonnages offered were in about the same volume as a month ago.

Out-of-town buyers were apathetic. At Flint and Pontiac, bundles moved at $38. Usually, prices at those points are several dollars above Detroit quotations.

McLouth Steel Corp., with 200 cars on track, indicates it will not buy any scrap this month. Ford Motor Co.'s Steel Div. also is out of the market.

The strike at a Canadian steel mill is hampering shipments into that area, and the local market is flooded with material.

Buffalo—Prices are steady here, but some traders anticipate an advance when consumers order October delivery tonnage.

The local market is influenced by prices established in other districts within shipping distance, notably Youngstown and Pittsburgh.

Cincinnati — District steel mills are expected to enter the market for the No. 1 grades early this month. Indications are they will buy at no more than month-ago prices. Some traders think the principal steelmaking grades may slip $1 a ton.

St. Louis—The scrap market is strong here, but prices are not moving up. Demand for the cast grades is good, and rerolling rails are scarce. A $1 drop in rerolling rails reflects freight differentials, not a weakening in price.

New York — Brokers have advanced their buying prices on No. 1 cupola cast to $36-$37, but otherwise the market on all major grades of scrap is unchanged. Trading in steel scrap is primarily for export.

Birmingham—Cast scrap is moving, but there is little activity in the open hearth and electric furnace grades. Consumers are not buying now, but some indicate they will enter the market early this month. Generally, the market appears strong, and higher prices are expected. The export market is showing signs of strength.

Houston—Based on a mill purchase of October delivery scrap, broker buying prices here are up $2 a ton on No. 1 heavy melting, and $1 on No. 2 heavy melting and No. 2 bundles.

A scattering of quotations in Louisiana indicates a minor revival is underway in the export market.

Seattle—A more optimistic note prevails in the scrap market, largely reflecting improved demand in eastern consuming districts. Local sellers look for better prices and more active movement soon.

San Francisco—There has been some reduction of scrap stockpiles as the result of quickening steelmaking operations here in recent weeks.

Iron Ore . . .

Iron Ore Prices, Page 129

Consumption of iron ore in the U. S. and Canada during August totaled 7,748,987 gross tons, reports the American Iron Ore Association. In August last year 11,422,723 tons

(*Please turn to Page* 139)

Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Oct. 1, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Oct. 1	$43.00
Sept. 24	43.00
Sept. Avg.	43.00
Oct. 1957	37.37
Oct. 1593	32.75

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	*34.00-35.00*
No. 1 dealer bundles	43.00-44.00
No. 2 bundles	31.00-32.00
No. 1 busheling	43.00-44.00
No. 1 factory bundles	47.00-48.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	24.00-25.00
Cast iron borings	24.00-25.00
Cut structurals:	
2 ft and under	49.00-50.00
3 ft lengths	48.00-49.00
Heavy turnings	41.00-42.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	49.00-50.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Stove plate	41.00-42.00
Unstripped motor blocks	*31.00-32.00*
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Random rails	54.00-55.00
Railroad specialties	52.00-53.00
Angles, splice bars	52.00-53.00
Rails, rerolling	60.00-61.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	115.00-120.00
430 bundles & solids	120.00-125.00
430 turnings	50.00-52.00

CHICAGO

No. 1 hvy melt, indus.	*44.00-45.00*
No. 1 hvy melt, dealer	*42.00-43.00*
No. 2 heavy melting	*35.00-36.00*
No. 1 factory bundles	*46.00-47.00*
No. 1 dealer bundles	42.00-43.00
No. 2 bundles	*28.00-29.00*
No. 1 busheling, indus.	*44.00-45.00*
No. 1 busheling, dealer	*42.00-43.00*
Machine shop turnings	*21.00-22.00*
Mixed borings, turnings	*23.00-24.00*
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut structurals, 3 ft	*45.00-46.00*
Punchings & plate scrap	50.00-51.00

Cast Iron Grades

No. 1 cupola	46.00-47.00
Stove plate	44.00-45.00
Unstripped motor blocks	39.00-40.00
Clean auto cast	52.00-53.00
Drop broken machinery	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt	48.00-49.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	60.00-61.00
Rails, 18 in. and under	61.00-62.00
Angles, splice bars	56.00-57.00
Axles	70.00-71.00
Rails, rerolling	*64.00-65.00*

Stainless Steel Scrap

18-8 bundles & solids	*215.00-225.00*
18-8 turnings	*120.00-125.00*
430 bundles & solids	115.00-120.00
430 turnings	65.00-70.00

YOUNGSTOWN

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	30.00-31.00
No. 1 busheling	43.00-44.00
No. 1 bundles	43.00-44.00
No. 2 bundles	30.00-31.00
Machine shop turnings	15.00-16.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	45.00-46.00
Electric furnace bundles	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	47.00-48.00

CLEVELAND

No. 1 heavy melting	39.50-40.50
No. 2 heavy melting	26.00-27.00
No. 1 factory bundles	44.00-45.00
No. 1 bundles	39.50-40.50
No. 2 bundles	28.00-29.00
No. 1 busheling	39.50-40.50
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	41.00-42.00
Cut structurals, plates 2 ft and under	*47.00-48.00*
Low phos. punchings & plate	41.00-42.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	40.50-41.50

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00
Heavy breakable cast	36.00-37.00
Stove plate	43.00-44.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	60.00-61.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	185.00-190.00
18-8 turnings	100.00-105.00
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	38.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	29.00
No. 1 busheling	40.00
Machine shop turnings	20.00†
Short shovel turnings	22.00†

Cast Iron Grades

No. 1 cupola	47.00
Charging box cast	39.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	49.00
Stove plate	46.00

Railroad Scrap

No. 1 R.R. heavy melt.	45.50
Rails, 18 in. and under	52.00†
Rails, random lengths	47.50
Rails, rerolling	*62.25*
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00*
No. 2 heavy melting	30.00-31.00*
No. 1 bundles	35.00-36.00*
No. 2 bundles	23.00-24.00
No. 1 busheling	35.00-36.00*
Cast iron borings	12.00-13.00
Machine shop turnings	24.00-25.00
Short shovel turnings	25.00-26.00
Bars, crops and plates	45.00-46.00
Structurals & plates	44.00-45.00
Electric furnace bundles	39.00-40.00
Electric furnace:	
2 ft and under	38.00-39.00
3 ft and under	37.00-38.00

Cast Iron Grades

No. 1 cupola	*54.00-55.00*
Stove plate	*54.00-55.00*
Unstripped motor blocks	*43.00-44.00*
Charging box cast	*29.00-30.00*
No. 1 wheels	*43.00-44.00*

Railroad Scrap

No. 1 R.R. heavy melt.	39.00-40.00
Rails, 18 in. and under	*52.00-53.00*
Rails, rerolling	59.00-60.00
Rails, random lengths	47.00-48.00
Angles, splice bars	47.00-48.00

PHILADELPHIA

No. 1 heavy melting	*42.00*
No. 2 heavy melting	*38.00*
No. 1 bundles	*42.00*
No. 2 bundles	*26.00†*
No. 1 busheling	*42.00*
Electric furnace bundles	*42.00*
Mixed borings, turnings	20.00-21.00†
Short shovel turnings	*25.00*
Machine shop turnings	20.00-21.00
Heavy turnings	*35.00*
Structurals & plate	44.00-45.00
Couplers, springs, wheels	*48.00*
Rail crops, 2 ft & under	58.00-60.00

Cast Iron Grades

No. 1 cupola	*41.00*
Heavy breakable cast	44.00
Malleable	59.00-60.00
Drop broken machinery	49.00-50.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	30.00-31.00
No. 1 bundles	33.00-34.00
No. 2 bundles	19.00-20.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	11.00-12.00
Short shovel turnings	14.00-15.00
Low phos. (structurals & plates)	37.00-38.00

Cast Iron Grades

No. 1 cupola	*36.00-37.00*
Unstripped motor blocks	28.00-29.00
Heavy breakable	33.00-34.00

Stainless Steel

18-8 sheets, clips, solids	180.00-185.00
18-8 borings, turnings	80.00-85.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	75.00-80.00

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	34.00-35.00
No. 2 bundles	27.00-28.00
No. 1 busheling	34.00-35.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 2 ft and under	43.00-44.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	43.00-44.00
No. 1 machinery	47.00-48.00

Railroad Scrap

Rails, random lengths	53.00-54.00
Rails, 3 ft and under	59.00-60.00
Railroad specialties	43.00-44.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	38.50-39.50
No. 2 heavy melting	32.50-33.50
No. 1 bundles	38.50-39.50
No. 2 bundles	25.00-26.00
No. 1 busheling	38.50-39.50
Machine shop turnings	18.00-19.00
Mixed borings, turnings	17.00-18.00
Short shovel turnings	20.00-21.00
Cast iron borings	17.00-18.00
Low phos. 18 in.	45.00-46.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Heavy breakable cast	34.00-35.00
Charging box cast	34.00-35.00
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	48.00-49.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	*40.00*
No. 2 heavy melting	*34.00*
No. 1 bundles	*40.00*
No. 2 bundles	*25.00*
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	44.00

Cast Iron Grades

No. 1 cupola	*46.00*
Heavy breakable	30.00†
Foundry malleable	41.00
Unstripped motor blocks	37.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	29.00
No. 2 heavy melting	22.50
No. 1 bundles	29.00
No. 2 bundles	21.00
No. 1 busheling	29.00
Machine shop turnings	8.00-9.00
Short shovel turnings	10.00-11.00
No. 1 cast	33.00-34.00
Mixed cupola cast	33.00-34.00
No. 1 machinery cast	36.00-38.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*30.00-31.00*
No. 2 heavy melting	*19.00-20.00*
No. 1 bundles	*31.00-32.00*
No. 2 bundles	*18.00-19.00*
No. 1 busheling	*30.00-31.00*
Machine shop turnings	*8.00-9.00*
Mixed borings, turnings	10.00-11.00
Short shovel turnings	*10.00-11.00*
Punchings & plate	*30.00-31.00*

Cast Iron Grades

No. 1 cupola	*38.00-39.00*
Stove plate	27.00-28.00
Charging box cast	27.00-28.00
Heavy breakable	26.00-27.00
Unstripped motor blocks	16.00-17.00
Clean auto cast	37.00-38.00

SEATTLE

No. 1 heavy melting	30.00†
No. 2 heavy melting	28.00†
No. 1 bundles	22.00†
No. 2 bundles	20.00†
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b. plant)	21.00†

LOS ANGELES

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	28.00
No. 2 bundles	17.00
Machine shop turnings	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Cut structurals and plate 1 ft and under	45.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	39.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00

SAN FRANCISCO

No. 1 heavy melting	32.00
No. 2 heavy melting	30.00
No. 1 bundles	30.00
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

HAMILTON, ONT.

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	30.00
Unprepared	24.00
Short steel turnings	19.00

Cast Iron Grades‡

No. 1 machinery cast	45.00-50.00

*Brokers' buying price.
†Nominal.
‡F.o.b. Hamilton, Ont.

We learned a lesson from a lineman

"*Safety* is where I shine," one of our linemen told us recently. "Safety's one of the most important parts of my job. But *saving*—and that's important, too, for a family man—that's too tough. Why don't you guys in the office make it easy for us—like that Payroll Savings Plan for U.S. Savings Bonds?"

Of course, that is *exactly* what we want to do for *every one* of our people. We explained that to our lineman. But he certainly made us stop and think. Because if *he* didn't know about our plan for buying U.S. Savings Bonds through Payroll Savings, then many other employees must be in the same position.

We telephoned our State Savings Bond Director for help. He worked out a company-wide campaign for us. Application cards were placed in the hands of every person on our payroll. We had a *fair* participation when the campaign started. But within days afterward, we had an *excellent* percentage of bond buying employees.

It shows that practical people welcome a chance to set up this sound savings plan. Today, particularly, there are more payroll savers than ever before in peacetime. Look up *your* State Director in the phone book or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D. C.

STEEL
The Metalworking Weekly

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Quotas Boost Market

Both lead and zinc sales have strengthened since limit was put on imports. Lead price advanced to 11.5 cents a pound. Stepped-up barter program likely

Nonferrous Metal Prices, Pages 138 & 139

THE IMPROVEMENT in lead and zinc sales which started earlier in the summer has gained momentum since the imposition of import quotas.

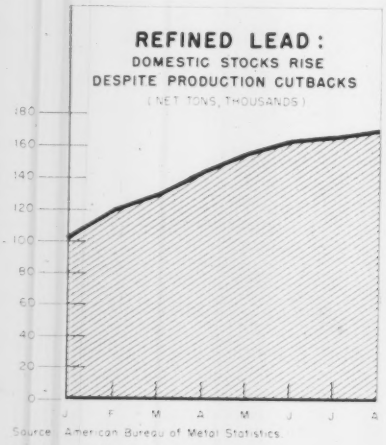
It is too early to predict the long term effects of quotas on the supply-demand picture, but immediate results have encouraged producers.

Price Up—Most important is the 0.5 cent a pound bump in the lead quotation (to 11.5 cents, New York) on Sept. 30. It sets the stage for an advance in the zinc price, which has held at 10 cents a pound since July 1, 1957. Producers are reluctant to make many shipment commitments at the present price which extend pretty far into the future in the belief quotations will eventually rise. As one metalman puts it: "It's a matter of someone having the guts to make the first move." Prediction: Zinc will go up within the next few weeks; lead could see another price advance.

Strengthening—Probably the most encouraging sales pickup has been in shipments of special high grade zinc to diecasters and alloymakers, a market that has been weak all year. Galvanizing continues strong. Lead sales to the construction and storage battery industries have improved.

With business improving and less imports due to come into the U. S., watch for producers' stocks to fall. The trend started for zinc in August and should continue. However, in August, lead inventories rose to a 21-year high of 169,302 tons (see chart), but metalmen believe they reached their peak at that point.

Quotas On—Import quotas officially went into effect last Wednesday under the administrative control of the Bureau of Customs. They limit shipments of metals and concentrates into the U. S. to 520,960 tons of zinc and 354,720 tons of lead annually. The formula: 80 per cent of the average yearly amount imported into the U. S. during 1953-57 as listed by the Tariff Commission under the heading "Dutiable Imports." Specifically excluded are metal imported under barter contracts, concentrates brought in for smelting and re-export, and foreign babbitt and solder.



Revival of Barter?—The exclusion of barter from quota restrictions has led to speculation the government may step up this program to quiet some anguished howls from foreign capitals. The drawback would be that barter would slow up a closer balance in world supply and demand.

Explains one Washington official: "While U. S. producers have curtailed output, foreign operators continue to produce at near capacity. Maybe quotas are our way of giving foreign producers a yardstick to how much production we can live with. It's possible barter might take some of the sting out of quotas while foreign producers are adjusting production to realistic levels."

Problems—The quota controversy is a long way from being settled. There are a lot of administrative problems that weren't spelled out in the Presidential proclamation. Some may require court interpretation, believes a Washington observer.

Copper Going Up?

All the ingredients for a hike in copper prices are present. Domestic demand is on the increase. Foreign sales are up. With 550,000 tons of annual production idle in Canada and Africa, there is threat of a shortage in Europe. Continuation of the walkouts will almost certainly bring higher world prices.

Silver Price Higher

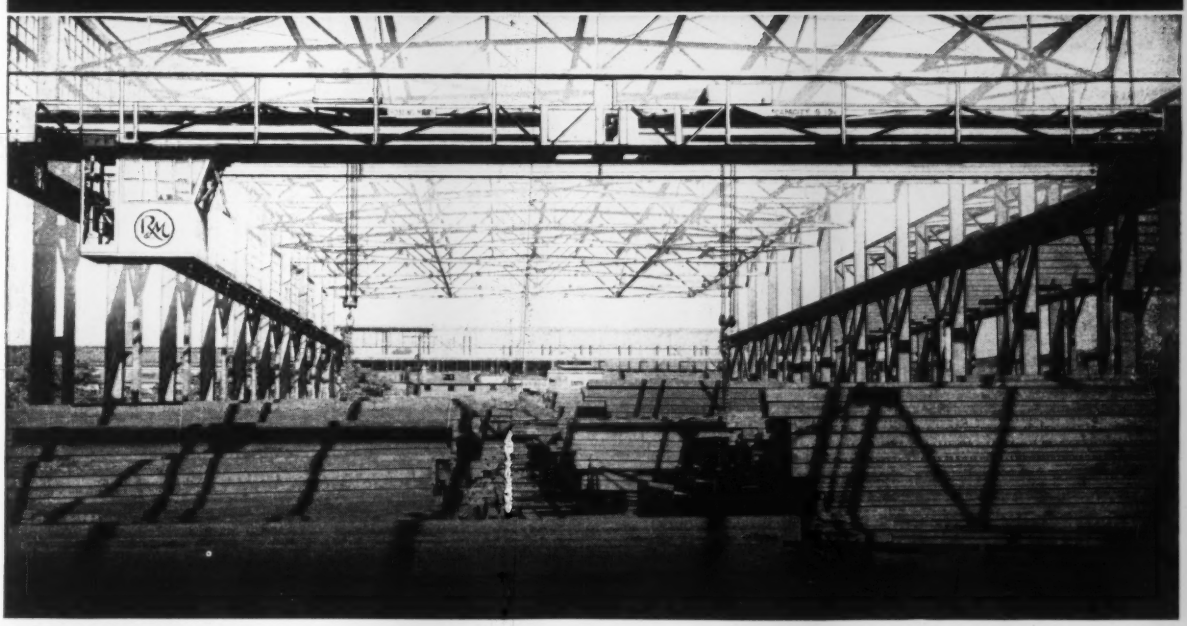
The domestic price of silver edged up to 88.875 cents an ounce on Sept. 26, and jumped again to 89.125 the next day, marking the first increases since last January. Reason: Supplies available at the old price were low. Don't be surprised by further advances. More silver becomes available from producers and the U. S. government as quotations go up.

NONFERROUS PRICE RECORD

	Oct. 1 Price	Last Change		Previous Price	Aug. Avg	July Avg	Sept., 1957 Avg
Aluminum	24.70	Aug.	1, 1958	24.00	24.700	24.000	26.000
Copper	26.50	Sept.	17, 1958	26.375-26.50	26.510	26.125	26.469
Lead	11.30	Sept.	30, 1958	10.80	10.646	10.800	13.800
Magnesium	35.25	Aug.	13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec.	6, 1956	64.50	74.000	74.000	74.000
Tin	95.25	Oct.	1, 1958	94.625	94.995	94.950	93.422
Zinc	10.00	July	1, 1957	10.50	10.000	10.000	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

cranes that stay new



Robbins & Myers cranes have long, productive lives because they combine conservative engineering with quality construction materials—a combination that doesn't permit short-cut manufacturing. Carefully controlled standards are maintained for bridge deflection under load, rigidity, service factor. Your R & M crane is completely assembled and tested before shipment, then match-marked and doweled for perfect reassembly in your plant. R & M builds standard cranes with capacities to 10 tons, spans to 65 feet; larger capacities and longer spans are available in custom designs.

Illustrated above: 15 ton capacity, two hoist, cab controlled crane. Span: 74½ feet. Bridge control: 6 step variable speed to 250 fpm. Trolley control: 4 step variable speed to 125 fpm.

Send today for our new bulletin describing single and double girder cranes in top-running and underhung designs.

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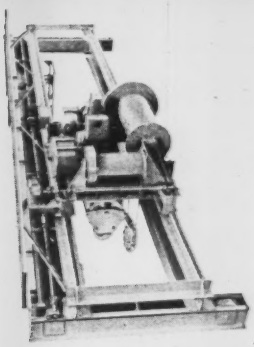

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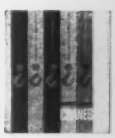

Request Bulletin 900

Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 23.50-24.50, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.25% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per ton, ton lots.

Cadmium: Sticks and bars, $1.45 per lb deld.

Cobalt: 97.99% $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 26.50 deld.; custom smelters, 26.50; lake, 26.50 deld.; fire refined, 26.25 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 11.30; chemical, 11.40; corroding, 11.40, St. Louis, New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, AZ91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $240-242 per 76-lb flask.

Molybdenum: Unalloyed turned extrusions, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-17 per troy oz.

Platinum: $57-60 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 89.125 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 95.25.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), 2.05; grade A-2 (0.5% Fe max.), $1.85 per lb.

Tungsten: Powder, 89.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 10.00; brass special, 10.25; intermediate, 10.50, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 11.00; special high grade, 11.25 deld. Diecasting alloy ingot No. 3, 12.25; No. 2, 12.75; No. 5, 12.50 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.50-25.25; No. 12 foundry alloy (No. 2 grade), 21.50-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 22.75; grade 2, 21.50; grade 3, 20.50; grade 4, 18.00.

Brass Ingot: Red brass, No. 115, 27.00; tin bronze, No. 225, 36.00; No. 245, 30.75; high-leaded tin bronze, No. 305, 31.25; No. 1 yellow, No. 405, 22.75; manganese bronze, No. 421, 24.50.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.845, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.825, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 31.855; l.c.l., 32.48. Weatherproof, 20,000-lb lots, 33.66, l.c.l., 34.41, before quantity discounts.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $17.00 per cwt; pipe, full coils, $17.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-11.00; forging billets, $4.10-4.35; hot-rolled and forged bars, $5.25-6.35.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 24.00; ribbon zinc in coils, 20.50; plates, 19.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strips, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H.R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.30	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.10	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths.

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	....	....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	68.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.375	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	....	....
2.250	53.50	52.10	....	56.20
2.375	53.50	52.10	....	....
2.500	53.50	52.10	....	56.20
2.625	....	50.40	....	....
2.750	51.90	50.40	....	56.20
2.875	....	50.40	....	....
3.000	51.90	50.40	....	56.20
3.125	....	50.40	....	....
3.250	....	50.40	....	....
3.375	....	50.40	....	....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard lengths, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ¾ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

	Alloy 6063-T5	Alloy 6062-T6
Factor		
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; 081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.70; .25-.75 in., 70.60-71.60. Tooling plate, .25-3.0 in., 73.00.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.60-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 19.75-20.25; No. 2 heavy copper and wire, 17.75-18.25; light copper, 15.75-16.25; No. 1 composition red brass, 16.00-16.25; No. 1 com-

BRASS MILL PRICES

MILL PRODUCTS a

	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes
Copper	49.63b	46.86c	....	49.82
Yellow Brass	43.57	29.28d	44.11	46.48
Low Brass, 80%	46.03	45.97	46.57	48.84
Red Brass, 85%	46.89	46.83	47.43	49.70
Com. Bronze, 90%	48.30	48.24	48.84	50.86
Manganese Bronze	51.52	45.74	56.18	....
Muntz Metal	45.95	41.76	....	....
Naval Brass	47.83	42.14	54.89	50.99
Silicon Bronze	54.37	53.56	54.41	56.29
Nickel Silver, 10%	58.82	61.15	61.15	....
Phos. Bronze, A-5%	68.59	69.09	69.09	70.27

SCRAP ALLOWANCES e (Based on copper at 26.50c)

Clean Heavy	Rod Ends	Clean Turnings
22.500	22.500	21.750
17.000	16.750	15.250
19.000	18.750	18.250
19.750	19.500	19.000
20.625	20.375	19.875
15.625	15.375	14.875
15.875	15.625	15.125
15.625	15.375	14.875
22.125	21.875	21.125
22.000	21.750	11.000
23.375	23.125	22.125

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.00-15.50; new brass clippings, 13.00-13.50; light brass, 9.50-10.00; heavy yellow brass, 11.00-11.50; new brass rod ends, 11.00-11.50; auto radiators, unsweated, 12.00-12.50; cocks and faucets, 13.00-13.50; brass pipe, 12.50-13.00.

Lead: Heavy 7.00-7.50; battery plates, 4.00-4.50; linotype and stereotype, 9.25-9.75; electrotype, 8.25-8.75; mixed babbitt, 9.00-9.50.

Monel: Clippings, 32.00-34.00; old sheets, 26.00-28.00; turnings, 20.00-23.00; rods, 32.00-34.00.

Nickel: Sheets and clips, 52.00-55.00; rolled anodes, 52.00-55.00; turnings, 37.00-40.00; rod ends, 52.00-55.00.

Zinc: Old zinc, 3.00-3.25; new diecast scrap, 2.75-3.00; old diecast scrap, 1.50-1.75.

Aluminum: Old castings and sheets, 9.25-9.75; clean borings and turnings, 6.25-6.75; segregated low copper clips, 13.00-13.50; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.75-13.25; mixed high copper clips, 11.50-12.00.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 10.50-11.00; clean borings and turnings, 9.50-10.00; segregated low copper clips, 16.50-17.00; segregated high copper clips, 15.50-16.00; mixed low copper clips, 15.50-16.00; mixed high copper clips, 15.00-15.50.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 9.25-10.00; clean borings and turnings, 8.50-9.00; segregated low copper clips, 13.50-14.00; segregated high copper clips, 12.00-12.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 11.00-11.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 52.50; light scrap, 47.50; turnings and borings, 32.50.

Copper and Brass: No. 1 heavy copper and wire, 22.00; No. 2 heavy copper and wire, 21.25; light copper, 19.00; refinery brass (60% copper) per dry copper content, 20.00.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 22.00; No. 2 heavy copper and wire, 21.25; light copper, 19.00; No. 1 composition borings, 19.00; No. 1 composition solids, 19.50; heavy yellow brass solids, 13.50; yellow brass turnings, 12.50; radiators, 15.25.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.45.

Copper: Flat-rolled, 43.03; oval, 14.50, 5000-10,000 lb; electrodeposited, 35.25, 2000-5000 lb lots; cast, 37.75, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 112.50; 200-499 lb, 111.00; 500-999 lb, 110.50; 1000 lb or more, 110.00.

Zinc: Balls, 16.00; flat tops, 16.00; flats, 19.25; ovals, 18.50, ton lots.

CHEMICALS

Cadmium Oxide: $1.45 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.90; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.05; 2000-5900 lb, 12.05; 6000-11,900 lb, 11.80; 12,000-22,900 lb, 11.55; 23,000 lb or more, 11.05.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,000 lb, 29.00; 23,000-35,900 lb, 28.50; 36,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 75.20; 100-600 lb, 66.20; 700-1900 lb, 63.50; 2000-9900 lb, 61.60; 10,000 lb or more, 60.30.

Stannous Chloride (anhydrous): 25 lb, 150.10; 100 lb, 145.30; 400 lb, 142.80; 800-19,900 lb, 101.90; 20,000 lb or more, 95.80.

Stannous Sulphate: Less than 50 lb, 135.50; 50 lb, 105.50; 100-1900 lb, 103.50; 2000 lb or more, 101.50.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(*Concluded from Page* 133)

were consumed. Consumption in the first eight months this year was 57,302,580 tons, vs. 91,097,288 in the like period of 1957.

At the end of August there were 276 blast furnaces in operation, compared with 166 at the end of July, and 244 at the end of August a year ago.

Stocks of ore at the end of August amounted to 66,374,788 tons, vs. 58,511,981 a year ago. Of the total, 44,884,238 tons were U. S. Lake Superior ore, and 1,343,857 tons were Canadian Lake Superior ore.

Pig Iron . . .

Pig Iron Prices, Page 128

Demand for merchant iron is improving slowly. Foundries have not experienced the bulge in bookings of castings they expected in September.

More hot metal is required for steelmaking furnaces, resulting in a gain in blast furnace operations. Inland Steel Co. blew in its eighth and last stack (Furnace B) on Sept. 26 at its Indiana Harbor (Ind.) Works. U. S. Steel Corp. is restoring two banked units at South Works, South Chicago, Ill., this week. Bethlehem Steel Co. blew in an additional blast furnace at its Lackawanna, N. Y., plant.

Mystic Iron Works, Everett, Mass., will make no change in fourth quarter prices to contract customers, holding at $68, furnace, for No. 2 foundry grade.

Dutch iron is being offered at New York for the first time in several years. Foundry and basic grades are offered in relatively small quantities for delivery by the end of this year. Prices are close to those quoted on domestic material.

West Germany, Spain, and Japan also are offering more iron than in some time. However, sales are light, reflecting in part below-normal requirements of merchant iron consumers along the seaboard.

Some Imported Items Off

Stiff competition has forced a substantial price drop on wire rods imported from western continental European countries. Except for modest revisions in deformed bars, bar size angles, and merchant bars, though, prices on imported steel

WANTED

METAL PRODUCTS TO MANUFACTURE

Large, well equipped, well capitalized, sheet metal, light plate and structural shop is seeking assemblies or subassemblies to manufacture.

Plant has 170,000 sq. ft. of floor space and is centrally located in highly industrialized area. Equipment for square and rotary shearing, stamping (presses up to 200 tons), rolling, brake-forming, spot and seam-welding, manual arc, heliarc, sigma and unimelt welding, angle tube and bar forming, spray or dip painting, adequate packing and rail facilities available.

Practically no physical limitations as to length, height or weight of product. **WRITE BOX NO. 690, STEEL, PENTON BLDG., CLEVELAND 13, OHIO.**

WANT TO BUY

Steel By-Products Discs

2" to 2⅛" Diameter .060 to .125
4⅛" Diameter .060 to .125
6⅛" to 10" Diameter .060 to .125
11" to 12⅛" Diameter .085 to .095

Hot or Cold Rolled

KEYSTONE LAMP MFG. CORP.
Purchasing Department
Phone Slatington, Pa. POrter 7-3821

GET CASH NOW
for your new surplus motors, controls and transformers!
AVAILABLE: NEW MOTORS
Over 3,000 new motors in stock from ¼ HP to 300 HP. Special low prices.
Write, wire or phone collect!
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P.O. Box 352, Rochester 11, N.Y.
Long Distance Phone LB 1??

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Two Yoder M2-½ Rolling Mills. Liberal pensions, bonus, insurance. Progressive plant in small community with fine schools, recreation and nearby lakes. Send experience resume, references and salary range expected to: **Box 692, STEEL, Penton Bldg. Cleveland 13, Ohio**

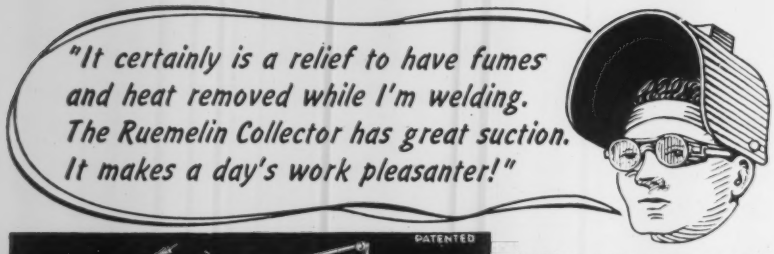
CLASSIFIED

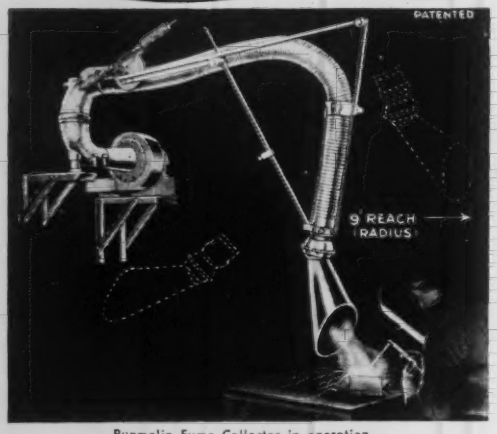
Accounts Wanted

MANUFACTURERS REPRESENTATIVE covering Detroit and lower Michigan calling on raw material buyers wants representation for aluminum, stainless steel and brass. Write Box 693, STEEL, Penton Bldg., Cleveland 13, Ohio.

CLASSIFIED RATES

All classifications other than "Positions Wanted" set solid, 50 words or less $15.00, each additional word .30, all capitals, 50 words or less $19.20, each additional word .38; all capitals leaded, 50 words or less $23.40, each additional word .47. "Positions Wanted" set solid, 25 words or less $3.60, each additional word .14, all capitals, 25 words or less $4.50, each additional word .18; all capitals leaded, 25 words or less $5.40, each additional word .22. Keyed address takes seven words. Cash with order necessary on "Positions Wanted" advertisements. Replies forwarded without charge. Displayed classified rates on request. Address your copy and instructions to STEEL, Penton Building, Cleveland 13, Ohio.


"It certainly is a relief to have fumes and heat removed while I'm welding. The Ruemelin Collector has great suction. It makes a day's work pleasanter!"



Ruemelin Fume Collector in operation.

Welding shops equipped with Ruemelin Fume Collectors are assured of a clean shop atmosphere. Noxious fumes, heat and smoke are eliminated at their source, thus improving working conditions, lessening fatigue and paving the way for increased plant production.

The Ruemelin Fume Collector hood can be instantly placed where needed anywhere in the booth welding area. No tedious adjustments necessary. Just pull the inlet hood to the welding position and you are ready to go.

Note the new spring-loaded counterbalance mechanism which makes Fume Collector much easier to handle. Ask for Bulletin 37-E illustrating this new feature.

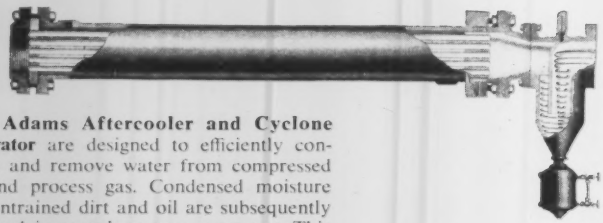
RUEMELIN MFG. CO.

MANUFACTURERS AND ENGINEERS
SAND BLAST AND DUST COLLECTING EQUIPMENT
3882 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

A 5718-½R

Aftercooler and Cyclone Separator designed for cleaner, dryer compressed air

R. P. ADAMS CO., INC.
222 East Park Drive, Buffalo 17, New York



The Adams Aftercooler and Cyclone Separator are designed to efficiently condense and remove water from compressed air and process gas. Condensed moisture and entrained dirt and oil are subsequently removed in a cyclone type separator. This unit is scientifically designed for maximum removal efficiency over a wide range of flow rates.

For normal use, units are available to cool gases to within 10° F of the temperature of the cooling water. Specially designed units are available to permit a 2° F approach to cooling water temperature, for application where low moisture content is critical.

Adams Aftercoolers and Separators are available from stock to handle 20 - 40,000 cfm with 10° cooling and 25 - 19,200 cfm where it is necessary to cool within 2°F of the cooling water. Special units can be supplied to suit an unlimited range of requirements. In all cases the maximum pressure loss at rated capacities is ½ psi.

This wide range of sizes enables the economical utilization of Adams Aftercoolers and Separators in virtually all industrial application. For further information on how R. P. Adams' units will solve your compressed air problems and save you money, write today for Bulletin 711.

from those countries are unchanged. This is even true of some items that are not moving actively to this country, but that are moving well in home markets and to certain other world market areas.

In general, steel import orders are picking up a little compared with a few weeks ago.

Deliveries from mills on most descriptions of bars and structurals range two to three months; on most wire products, six to eight weeks; and on hot and cold rolled sheets and basic bessemer plates, two to three weeks.

Ship Fewer Steel Barrels

Shipments of steel shipping barrels and drums totaled 2,663,029 units in July, reports the Bureau of the Census. In June the total was 2,678,624, and in July, 1957, it was 3,071,404. In the first seven months this year, output was 18,103,905 units, vs. 21,701,275 in the like period of 1957.

The movement of steel pails in July amounted to 6,702,727 units, vs. 6,775,443 in June and 7,141,825 in July last year. The total for the first seven months was 41,936,149, vs. 45,399,998 in the corresponding period last year.

Samarium Metal Available

Samarium of 98 to 99 per cent purity is available in lump or ingot form from Research Chemicals Inc., a division of Nuclear Corp. of America, New York. The high cross section of this rare earth metal, 5500 barns, has stimulated its consideration in reactor programs. Its availability should increase its applicability in pure form or in alloys

Canada . . .

U. S. steel suppliers in position to give prompt shipments have received some large orders for flat-rolled products as a result of the strike at the Hamilton Works of the Steel Co. of Canada. Some large Canadian manufacturers have been forced into the open market to protect their manufacturing programs.

Edward J. Cooney, vice president, A. C. Leslie Co. Ltd., Montreal, predicts: "If the strike lasts any length of time, shortages of some steel products are certain. Already, deliveries have lengthened, and large users are keeping an eye on stocks."

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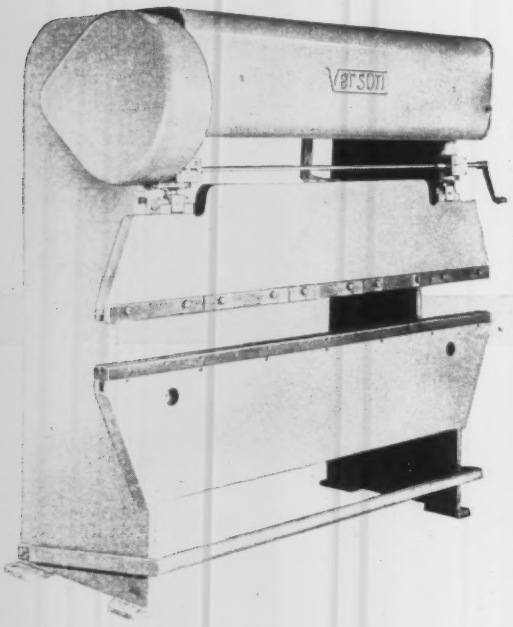
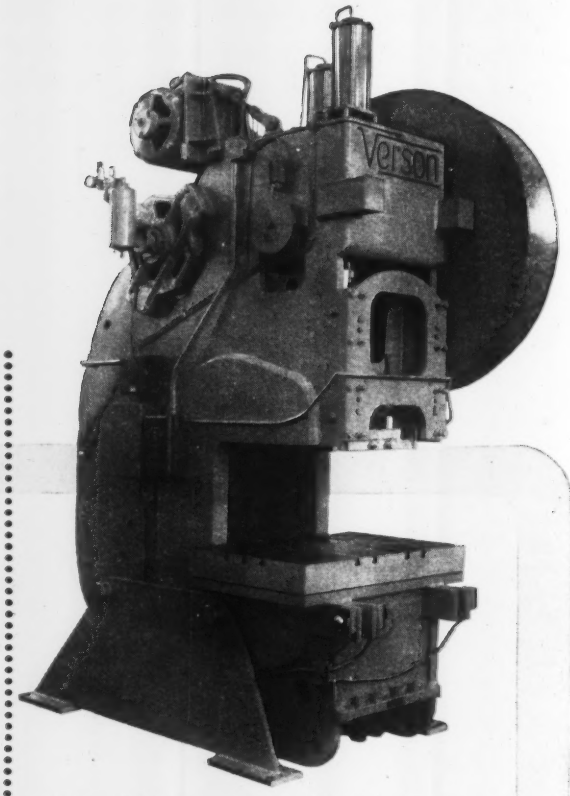


Standard Verson Model 1062 Press Brake. This and Model 16-48 are available from stock. Verson offers a complete line of mechanical and hydraulic press brakes in capacities from fifteen tons up.



Verson O.B.I. Presses feature "clean" design, heavy steel plate construction, enclosed gearing and reinforced gap. Also available as permanently upright or permanently inclined.

Verson Press Brakes and O.B.I. Presses provide "Big Press Performance" at modest cost

● Big performance . . . small cost . . . that's the story of Verson 16-48 and 1062 Press Brakes. If you're using a hand brake because you feel a power brake is too expensive or if you're tying up big machines to handle small odd jobs, now is the time to take a close look at these Standard Verson Press Brakes. Here are rugged, efficient power press brakes designed to do a man sized job at minimum cost . . . to bring the advantages of big brake performance to the smaller shop or to handle smaller jobs in the larger shop. Write for complete information.

● Verson Open Back Presses utilize design and construction features normally found only in big expensive machines. As a result, you get the highest standards of accuracy, efficiency and dependability. Verson's quality construction assures greater overall economy because it contributes so much to improved performance, long life and freedom from repairs.

Six Verson O.B.I. models range in capacity from 90 to 250 tons. Verson engineers will be pleased to assist you in selecting an O.B.I. to meet your shop requirements.

194

A Verson Press for every job from 60 tons up.

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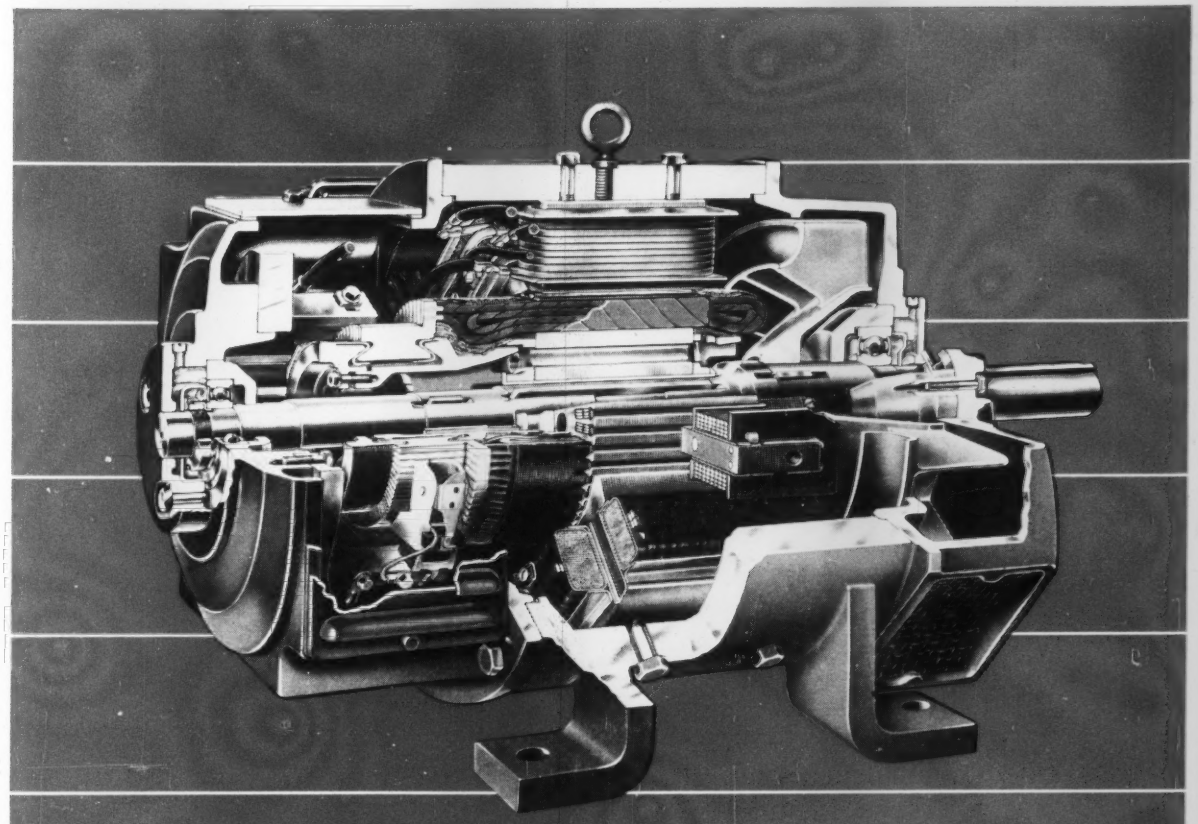

THE RELIANCE SUPER 'T'

A New Kind of D-c. Motor With DYNAMIC RESPONSE

Here is a motor built to make maximum use of d-c. flexibility. The Super 'T' puts Dynamic Response into starts, stops, and speed changes. Dynamic Response gives you a 50% increase in torque and a 50% decrease in reaction time.

This top performance is due to advanced balanced design. Lighter, small diameter armatures cut mechanical inertia 50%. Superior Class B insulation, gives extended life even at temperatures as great as 130°C.

Top grade insulation plus engineered ventilation lets the Super 'T' take tremendous overloads. In fact, the Super 'T' can develop double normal horsepower during starts, stops, and speed changes.

The Super 'T' is a compact power package, designed inside and out for tough industrial service. From appearance to performance, the Reliance Super 'T' with Dynamic Response is today's most modern industrial motor.

C-1577

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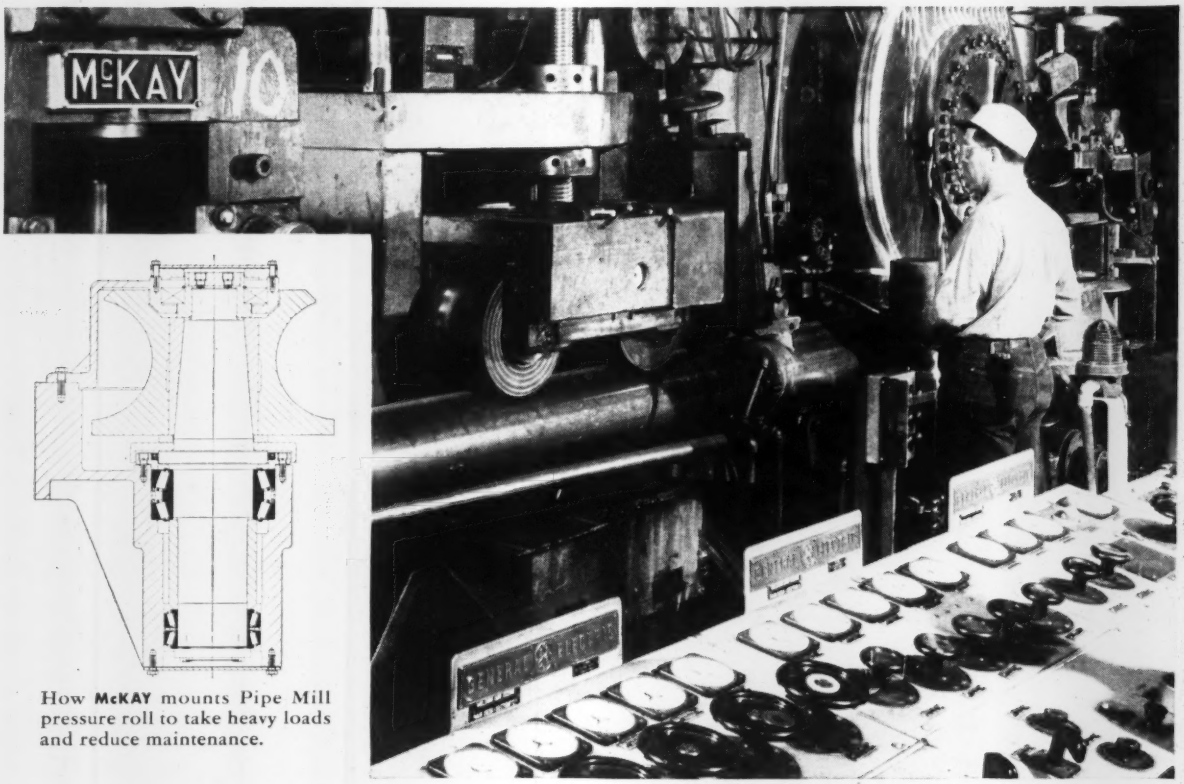

How **McKAY** mounts Pipe Mill pressure roll to take heavy loads and reduce maintenance.

TIMKEN® bearings take heavy loads on McKay 12¾" pipe mill at J & L

ROLLING out 120 feet-a-minute of 12¾" OD electriweld pipe, an advanced design McKay Pipe Mill is setting new production records at Jones & Laughlin, Aliquippa, Pennsylvania.

To get this, engineers mounted five Timken® tapered roller bearings on the pressure roll shafts and at other vital points. They take the heavy shock loads as pressure rolls upset the pipe edges during the welding operation. These same bearings must take the terrific sizing loads which are present when any cold pipe comes through the welding pass.

Timken bearings' rollers and races are case-carburized to produce hard, wear-resistant surfaces over tough, shock-resistant cores that add longer life to bearings and machine, smooth the way for minimum down time and record production.

The smoke and spatter of welding operations make tight closures a *must*. Timken bearings hold shafts concentric with their housings, keep dust and dirt *out*, lubricant *in*. Maintenance, of course, stays *down*.

Timken bearings take all the stresses in stride because they take both radial and thrust loads, or any combination of loads. They roll the load. Friction is virtually eliminated because Timken bearings are designed by geometric law to have true rolling motion. And they're precision manufactured to live up to their design.

Timken bearings help put go and life in your machines—to make better products, make bigger profits. That's BETTER-ness. Specify Timken bearings. They're at the hub of BETTER-ness. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable: "TIMROSCO".

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This symbol on a product means its bearings are the best.

BETTER-ness rolls on TIMKEN® tapered roller bearings